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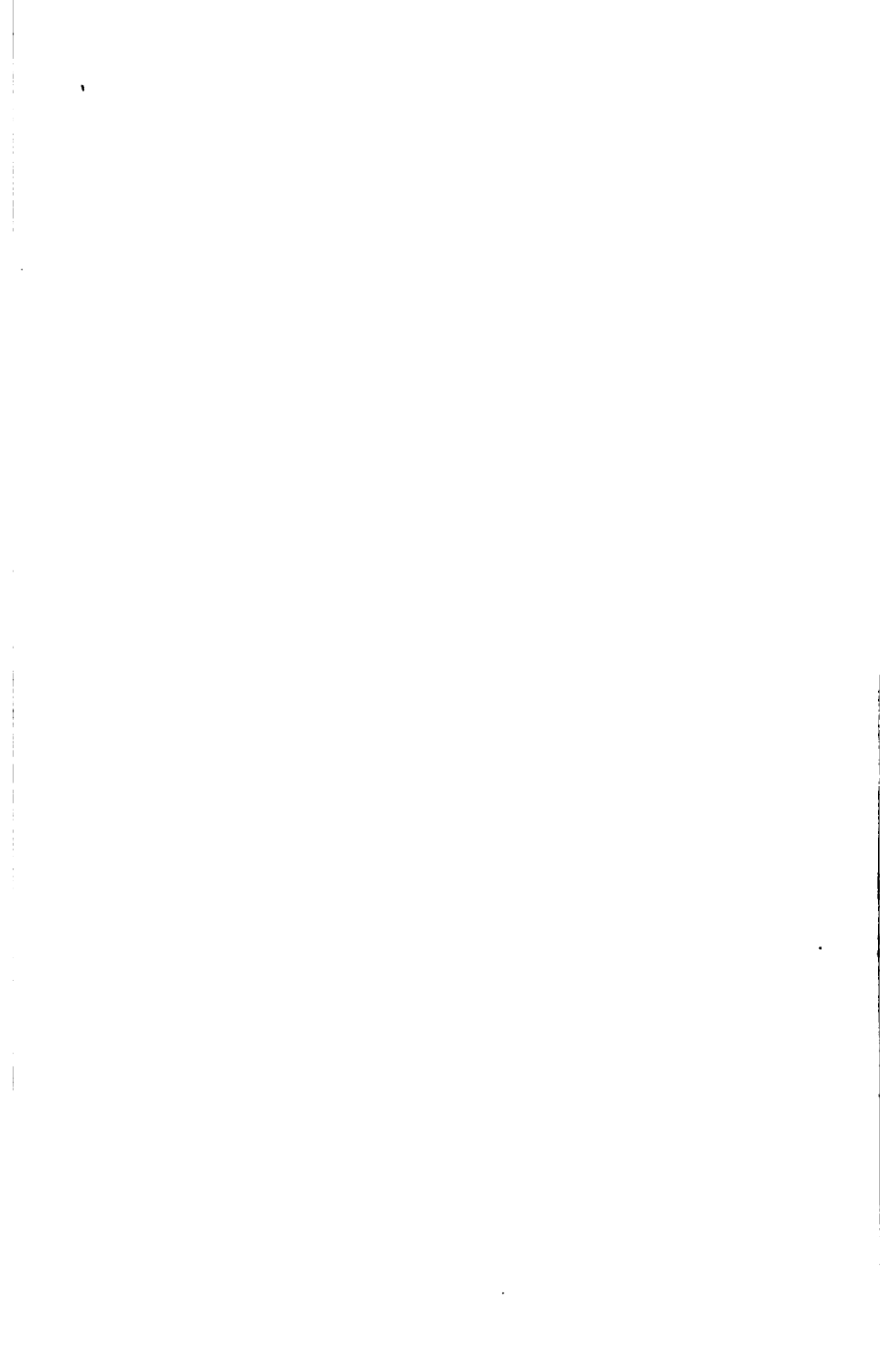
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XV

**INDUSTRIAL EDUCATION: ITS PROBLEMS,
METHODS, AND DANGERS**



INDUSTRIAL EDUCATION

ITS PROBLEMS, METHODS

AND DANGERS

BY

ALBERT H. LEAKE

INSPECTOR OF TECHNICAL EDUCATION,
ONTARIO, CANADA



UNIV. OF
CALIFORNIA

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TO THE
ADMINISTRATIVE

PREFACE

THIS series of books owes its existence to the generosity of Messrs. Hart, Schaffner & Marx, of Chicago, who have shown a special interest in trying to draw the attention of American youth to the study of economic and commercial subjects. For this purpose they have delegated to the undersigned committee the task of selecting or approving of topics, making announcements, and awarding prizes annually for those who wish to compete.

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The present volume, submitted in Class A, was awarded the first prize in that class.

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PART I
THE PROBLEMS

INDUSTRIAL EDUCATION

ITS PROBLEMS, METHODS AND DANGERS

I

INTRODUCTION

No matter how far back we go in educational history and literature, it is impossible to find a period when the problems of industrial education were not with us. True the subject did not always appear under that special name, nor did it wear the clothes in which it is garbed to-day, but it was there nevertheless.

In 1645, the Marquis of Worcester, while imprisoned in the Tower of London and working on his steam and water engines, saw a vacant lot, from the window, and gave instructions to his agent for its purchase, intending, as soon as he was set at liberty, "to erect a school wherein boys might learn something of the principles of the mechanic arts." Unfortunately the opportunity was never given to him to put his plans into operation.

In 1676, there was published in England a book entitled "How to Outdo the Dutch without Fighting," by Andrew Yarranton. The author says:—

Inasmuch as we cannot fight on the seas as our boats are inferior to those of the Dutch, if we are to exist at all we must sharpen the wits of our people.

He points out that "Mechanics Universities" had existed for many years in Germany and Holland, and counsels the securing of teachers from those countries.

Get a good man from Freiburg to put us in the way of making tapes, and bring over two engines, one for narrow and one for

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broad tapes with wheels to spin. Send for one man to Dort in Holland to put us in the way of treating the fine threads, and for a spinning mistress from Germany to govern the little maids, and instruct them in the art of spinning, for a man from Haarlem in Holland to whiten your tapes and threads; and if you do this you will become masters of it as Manchester is in all the things it trades in.

In the same year Chief Justice Hale recommended to Parliament the establishment of an industrial school in every parish.

President Leonard Hoar, of Cambridge, in a letter to Robert Boyle, who died in 1691, said: —

I would have a large, well-sheltered garden and orchard for students addicted to planting; an ergasterium for mechanical fancies, and a laboratory chemical for those philosophers that by their senses would cultivate their understanding, for the students to spend their times of recreation at them; for reading or notions are but husky provender.

Two centuries afterwards came the Lawrence Scientific School of Arts and Sciences in connection with Harvard University (1847).

In 1705, Locke laid before the English Parliament a plan to counteract the spread of pauperism by the establishment of labor schools in each parish. The bill failed, as did one to the same effect proposed by Pitt in 1796.

The wave of discussion which passed over the educational world twenty-five or thirty years ago is as applicable to-day as it was then, if we substitute the term "industrial education" for "manual training." During the past ten years particularly, the subject seems to have been discussed from all points of view, in the press, on the platform, and even in those pulpits which do not usually concern themselves with the things of this world.

A large number of books have been issued and the available literature is constantly growing, but unfortunately the discussions and publications do not reach those to whom they are calculated to be of most benefit. They are read and discussed only by students of education, and

those who are already convinced of the necessity of the adoption of some adequate form of industrial training—a case very largely of preaching to the converted.

In this flood of discussion we are in danger of losing sight of the possible and the practical and are getting perilously close to theories and schemes which if not checked and turned will lead to disaster rather than to success.

In spite of the widespread propaganda, few have any distinct idea of what they mean when they use the term “industrial education” or “technical education,” or any definite opinion as to those who are to be chiefly benefited by it, or when it ought to be acquired, or how it can be introduced.

In the public consideration of any question the trend of thought seems to revolve around a central point, and there comes a time when it is necessary to call a halt and take stock of the situation. Certain aspects are always being insisted upon, and others equally or more important are ignored. Incorrect estimates are made, wrong views are taken, and the resulting action is foredoomed to failure and great economic waste.

Education is a peculiar business, and every man considers himself an authority and perfectly capable of saying how schools of all kinds should be conducted. In allowing the weight we do to these often ill-formed and immature opinions, we are apt to forget that the best in our educational systems has developed out of experience and not out of mere discussion. It is true that the man in the street provides the wherewithal for carrying on the work. It is also a recognized principle that “the man who pays the piper calls the tune.” We have also the right to choose our physician; but not many men have the temerity to dictate to him the treatment he shall prescribe or how it shall be administered.

The attitude of the public controls to a very large

extent the management and, through the management, the curriculum, work, and organization of our schools, and only when our people have been forced to the conclusion that they are not all born experts on educational affairs, may the teacher hope for freedom from ignorant and captious criticism. Let us take Germany as an illustration of a country having a sane public attitude towards educational affairs. Public opinion there is very much like public opinion in America, but with a vital difference — the German workman is fair enough to believe that some men know more about education than he does, while the American workman thinks he knows more about it than even those who have made it the business of their lives.

Industrial education is a popular subject, and it is now the predominant custom for all educationists to advocate it whether they know anything about it or not. "Assume a virtue if you have it not" seems to be the guiding principle, and many men who have accomplished little or nothing in other fields of educational effort are achieving publicity and popularity in advocating this new or rather re-born movement.

Educational propaganda seems to run in streaks. "Physical drill," "kindergarten," "art," "manual training," "religious education," "household science," "sex hygiene," "school cadets," and now "industrial education." Each is advocated strongly for a time, occupies the centre of the stage in the full glare of the limelight, and long before its full fruition is achieved some new candidate for popular favor appears on the scene, and the same process is repeated. It is earnestly to be hoped that industrial education will share a better fate and that the serious efforts now being put forth will not be relaxed until a general system of industrial education, suitable to all classes and each locality, is achieved.

Investigations and commissions to inquire into indus-

trial education are becoming quite chronic, and no State or Province is considered to be in the direct line of educational progress that does not initiate one of them. As a matter of fact, we knew the salient features almost twenty-five years ago, and already have much more information than is being utilized. If any more investigations are to be conducted or commissions issued, they should be first from within and not from without; that is, they should concern themselves with conditions that have to be met locally and not those that exist in some country three or four thousand miles off. If ever industrial training is to be economically justifiable and educationally beneficial, we must come down from the clouds, be more definite in our aims, accept conditions as they are, while working to improve them, and take the individual locality as the point of attack.

The great problem of the twentieth century is the problem of reducing or eliminating waste — waste of time, effort, money, and lives. Economic losses through industrial inefficiency and incapacity are beyond calculation. But probably in no other phase of our present-day civilization is there more direct waste and extravagance than in our educational systems. If a factory were definitely designed to turn out a certain article and eighty or ninety per cent of its product fell short of completion, that institution would speedily go to the wall, and cease to exist as a commercial factor.

It is pleasant to hoodwink ourselves, but very far from being profitable, and we have been engaged in this hoodwinking process in regard to education for many years. The people of Canada, and still more those of the United States, have long flattered themselves that their educational systems are democratic, and this flattering unction has been like charity in that it covered a multitude of sins.

We have been told that everybody can get an education, and that the child of the Prime Minister or President sits on the same bench as the child of the laborer. As a matter

of fact, our educational systems are, and always have been, aristocratic in the highest degree. A democratic system of education would provide for the effective instruction of the eighty or ninety per cent of the people, as economic units, and not only for the ten or twenty per cent who proceed to high schools and universities, as at present.

There are many questions in connection with the subject, on which there seems to be, by tacit consent, a conspiracy of silence, but this conspiracy cannot be maintained much longer and these questions will have to be faced. Among them are, the lack of parental influence, guidance, and control; the power of the boy to do as he pleases in everything, particularly as to deciding when he shall leave school and the choice of an occupation; the necessity for a total reorganization of the elementary school course of study; the need or otherwise of industrial training for the so-called unskilled workers — those performing operations learned in a week and doing them as skillfully then as they would with months of training. What can we do for these boys or girls?

Some time ago I was passing through a button factory and saw a girl seated in front of a small machine. On one side of her machine was a box full of bone button blanks. She took one of the blanks with her left hand, placed it on the plate of the machine and deposited the pierced button in a box on her right. Her actions became as automatic as the machine itself. She was able to talk, stare from the window, and do her work without the slightest thought being devoted to it. Nine hours a day! The employer was asked what could be done to make that girl of more use to him. He answered, "Nothing."

I saw a boy in a biscuit factory, seated on a box beside a traveling canvas platform on which were placed biscuits in transit from the ovens to the cooling-room. He held, with two hands, a flat wooden mallet and jerked the platform up and down, ever without ceasing, in order to pre-

vent the biscuits sticking. Again nine hours a day! The same question was asked and the same reply received. The reader will notice that the question was not what could be done to make the boy or girl of more use to themselves. It had to be put purely from the employer's point of view. There are hundreds and thousands of such occupations, and those who are engaged in them form a large and most difficult part of our problem.

Social and educational workers like to denounce the modern factory system and the subdivision of labor, but it is wasted effort. They are both here to stay, and [the sooner we cease to rail, and begin to recognize the conditions that exist, rather than attempt to legislate for conditions that we would like to exist, the sooner we shall accomplish something educationally beneficial and economically sound.

Both foreign and home investigators are too apt to concern themselves with the large cities, but the problem is not primarily one of the big city. If ever it is to be worked out satisfactorily the small town and isolated community must receive much more consideration. A writer on "Apprenticeship" in 1882 says: —

Small villages, country cross-roads and "corners" I thought might present favorable conditions [for apprenticeship systems], but they seemed at first hardly worth considering. I examined the census returns, however, and found that of the 50,000,000 inhabitants of the United States, 9,000,000 only reside in cities and towns of 20,000 inhabitants and over 41,000,000 have their homes in the smaller towns and in the country.

The present situation, according to the United States Census of 1910, is as follows: Out of a population of 91,972,266, an aggregate of 34,153,014 live in cities with populations of 10,000 and over. This means that nearly 63 per cent of the people of the United States live in the smaller towns and in the country. According to the last Canadian census, 75.6 per cent of the population live in communi-

ties of less than 5000 inhabitants. From these figures it will be evident that if the bulk of the people is to be educated, the smaller towns and villages must receive ample consideration. Though, perhaps, in a number of these smaller towns agriculture is the main industry, yet a number of manufactures are carried on, in some cases under most favorable conditions; and though "Keep the boys on the farm" is a popular cry, yet it is doubtful if that is altogether just to the boy with a taste for purely mechanical pursuits.

There is a prejudice against working in the industries. The boy will not go into a shop where he has to don overalls and soil his hands, if he can help it. Both parents and teachers are largely to blame for this by directing the thoughts of the boy to "white shirt and black coat jobs," which strangely enough in a democratic country are supposed to confer a higher social status.

The term "industrial," as used until very recently, shows the popular conception. It was, and in some cases still is, applied in a narrow, limited, and degraded sense to schools for moral delinquents, as though industrial pursuits were to be engaged in only by those who had broken the laws of the country. Indeed, some American critics have said that if a boy wished to secure education for industry, he must be either a negro, an Indian, or a criminal.

Throughout the following pages the term "America" will be taken to include both Canada and the United States — neither country having the exclusive right to its use. The term "industrial" will apply to that form of instruction which is designed and calculated to benefit the rank and file — the large majority who will work at the bench and machine, and not the select few who are being trained in higher institutions for directive and managerial positions. The proper name for such higher instruction is "technical."

It is the purpose of this essay to discuss the problems of industrial education with suggestions for their solution,

and to point out methods by which the enormous economic waste now prevalent in the practical administration and organization of educational affairs may be eliminated, and adequate returns secured — in the shape of the “fitted product” — for the vast expenditure that is being incurred and which will be largely increased in the future.

II

THE PROBLEM IN ITS VARIOUS ASPECTS

3 At present the ranks of artisans and mechanics, both skilled and unskilled, are recruited almost entirely from the elementary schools. Unfortunately they are not entirely composed of those who finish even that course, but contain in addition many who leave before reaching the highest grades. Here is the statement of a manufacturer quoted in Mr. Arthur Dean's "The Worker and the State": —

I have made enquiry of over a hundred workmen in my employ, machinists largely, hence representing a trade of an intelligence higher than the average. The enquiry developed two facts, first, out of 102 men there was not to be found a single graduate of a high school or a person who ever attended as a pupil in a high school course. Second, out of 102 men I found only seven pupils who had completed the course in the grammar (elementary) schools. From this it appears that the education of all these mechanics is limited to such instruction as is furnished by the grammar schools and that ninety-three per cent of them belong to the class of pupils that drop out of school before completing the grammar school course.

General investigation and experience show that this is typical of all large industrial concerns, and surely prove the absolute necessity of establishing at least the beginnings of industrial training in the elementary schools, especially as some measure of that evanescent and elusive quality known as "culture" can be imparted at the same time. This reaches the heart of the matter, which cannot be said of other suggested remedies.

For example, there is a movement now on foot to raise the minimum age for school exemption from fourteen to sixteen, and also to make attendance at evening continua-

tion schools compulsory up to the age of seventeen or eighteen, for those not otherwise receiving instruction. These are both consummations devoutly to be wished, but should not something else be done first? Consider the following facts from "Education for Industrial Purposes," by Dr. John Seath, Superintendent of Education for Ontario: —

As to the primary schools: Out of an estimated total population in the Province of 2,687,861 there were enrolled in the public (elementary) schools 401,268, with an average daily attendance of 240,008 — that is 59.81 per cent of the enrolment, and in the separate schools (elementary Catholic), 55,084, with an average daily attendance of 34,553, — that is 62.78 per cent. Of these 239,331 (125,210 boys and 114,121 girls) were enrolled in rural and 216,971 (10,966 boys and 107,305 girls) in urban schools. Of the foregoing it is estimated that about 1070 girls and 1080 boys in rural and 970 girls and 930 boys in urban localities — a total of 4000 — leave school from the third form; and about 9190 boys and 8810 girls in rural and 10,750 boys and 10,250 girls in urban localities — a total of 39,000 — from the fourth form. Accordingly, as far as attendance at our Provincial schools is concerned, a grand total of about 48,000 end their education in the third and fourth forms: those from the third form leaving generally at from ten to twelve years of age, and those from the fourth form at from thirteen to fifteen.

The United States Commissioner of Education gives the following particulars: Of 25,000,000 children of school age (five to eighteen), less than 20,000,000 are enrolled in schools, and the average daily attendance does not exceed 14,000,000 for an average school term of less than eight months of twenty days each. The average daily attendance of those enrolled in the public schools is only 113 days in the year. It is estimated also that less than half the children finish the first six grades. In ten States less than two thirds of the school population are enrolled. In seventeen States less than two thirds of those enrolled are in average daily attendance. In twenty-six States the average length of a school term is less than one hundred and sixty days. In forty-two States the average attendance is

less than one hundred days, in nineteen States less than seventy-five days, in five States less than fifty days.

In contrast to the above take the official figures of the German educational authorities, which state that less than two per cent of the total number of children between the ages of six and fourteen are not in school, and only 0.01 per cent are illegally kept away from school.

Let us now consider an English example. The number of young persons in the city of Manchester between fourteen and seventeen years of age is 40,000. The attendance at evening or secondary schools is not more than 15,000, so that 62.5 per cent attend neither day nor evening schools. In the whole of England and Wales in 1906 and 1907, the total number between the same ages was 2,022,300, and no fewer than 1,498,349 of these (74 per cent) were attending neither day nor evening schools.

The figures from Canada and the United States go to show either that compulsory laws regarding elementary education do not exist, or that if they are on the statute book they are not enforced. It is the impression in some quarters that all has been done that is necessary when a law has received the assent of the legislature, but surely before new laws are promulgated it would be wise to enforce those we already have. If new laws are enacted and treated in the same way as the old, the situation will not be materially improved. Further, to raise the age to sixteen and continue, without radical alteration, the present system of public school education would be criminal and extravagant folly.

In 1909, a total amount of \$403,647,289 was raised for public school purposes in the United States. In Ontario for the corresponding time and purpose the amount was \$10,979,368. In view of these large expenditures and the educational loss to the pupils, it is not too much to ask that steps be taken immediately to stop the economic waste caused by the lax enforcement of the present laws,

for it should be remembered that the educational machinery must be kept going notwithstanding the absence of such a large proportion of the children. Probably this will never be done until truant or attendance officers are appointed by the State or Province, thus freeing them from local control.

These facts lead to the inevitable conclusion that our problem, for the present at least, is one for the elementary schools. It is an undisputed fact that, in America, not more than twenty per cent of elementary school pupils are able to climb the next rung of the "educational ladder" and enter the secondary schools. The remaining eighty per cent are prevented from taking the next step by the following causes: —

(a) The idea of the parent that further education of the kind hitherto received will not materially assist the boy in earning a living or making his way in the world.

(b) Economic causes — their small earnings being necessary to the up-keep of the family.

(c) The natural restlessness of the boy, who wishes to be doing something that he considers "worth while."

(d) Mental incapacity for further intellectual advancement.

What would be thought of the business organization and management of a firm that concentrated its attention on twenty per cent of its product? In addition to this, consider the fact that even of the eighty per cent, a large number drop out by the way. To continue the factory analogy, it is as if, say, at the twentieth or thirtieth operation in making a shoe, the process was stopped and the product thrown on the market for what it would fetch, entirely regardless of the labor that had been spent upon it.

In addition to this again, a large part of even this unfinished product has to be done twice over. In the factory this entails loss of time, money, and material; and there can be such a thing, in education, as waste of time, money, energy,

and mental resources of a nation, just the same as there is waste of the same factors in the manufacture of goods. It has been estimated by the Superintendent of the Cleveland Public Schools that approximately \$26,000,000 are annually wasted in the United States in taking children over work a second time. Dr. Ayres affirms that every sixth child in the elementary schools of the United States is a "repeater." Of course, it would not be fair to assume that all this sum is wasted, for it not infrequently happens that more is gained by a repetition of the same work than by taking up new work for which an insecure foundation has been laid, but it is quite certain that a very large portion of it is wasted.

This, perhaps, may be accounted for by (1) the mental incapacity of the child; (2) poor and ineffective teaching; and (3) faulty grading and organization. For the first, the social conditions, environment, parentage, and feeding are largely responsible, and children of this type should be treated in special schools. This is quite as much a social as an educational problem.

For the second, the educational authorities and directors must be blamed, though of course the people must accept the final responsibility. Inefficient workmen, who have to deal with inanimate material, are never retained in a shop; and I am not yet able to see why inefficient teachers, who have in their care not wood, metal, leather, or stone, but material vastly more precious, should be allowed to retain positions where they can work incalculable harm to the future of the nation. Professor Harvey, of Ypsilanti, says:—

Of the five hundred thousand teachers teaching in the United States, about one hundred thousand are teaching their first term of school this year. Of this one hundred thousand, scarcely more than ten thousand have had any professional training, or have given to the subject of teaching any preliminary thought that could be called professional study.

Would any manufacturer place in the hands of an absolute novice the manipulation of costly material and the working of a costly machine? It is a decided economic waste to pay salary (high or low) to an incompetent teacher; yet in a large number of the smaller towns and cities, and in some of the larger ones, there are many teachers who have been thirty or forty years in the service, and have given of their best, and whose services supervisors and inspectors from perfectly justifiable, humane, and sentimental reasons hesitate to dispense with. It would be an economically sound policy for the nation to offer salaries high enough to allow provision to be made for retirement, or to generously support an adequate pension scheme. Many towns are already doing this, and in these cases the above condition will soon be eliminated. Instances are known where women teachers have spent thirty or forty years in one room, teaching one grade of pupils. This is almost as bad as performing one of the hundred operations in the making of a shoe. All the inefficient teachers are not, however, of this class. Some are young, and here the inspector has to face another proposition. Directly he suggests that a change be made, in the interests of the children, all kinds of influence — social, church, political, society, lodge — are brought to bear upon the trustees, and his efforts to strengthen the staff, looking towards the efficient education of the children, are frustrated. Cases are not unknown where influences of this character have been powerful enough to secure the removal from office of the superintendent himself.

Another point to be considered in this connection is the fact that probably not more than half the boys leaving our elementary schools ever come into contact with a male teacher. An English observer has stated that the word "teacher," unless otherwise designated, is, in America, of feminine gender.

The third cause — faulty grading and organization —

is closely related to the course of study. Dr. Ayres says: —

We must so change our courses of study or our methods of grading and promotion that the children who make rapid progress through the grades shall be at least equal in numbers to those who make slow progress. At present our courses of study are not fitted to the abilities of the average pupil but to those of the unusually bright one. In an investigation in New York it was found that for every child making rapid progress through the grades there were eight who made slow progress. Last year (1909), in a Massachusetts city, for every one making rapid progress there were twenty-one making slow progress. In a large city in Pennsylvania the slow pupils are fourteen times as numerous as the rapid ones. In five other cities in different parts of the country the slow pupils are from ten times as numerous to one hundred and fifty times as numerous as the rapid ones. It is probably a most conservative statement to say that in the average city there are at least ten times as many children making slow progress as there are making rapid progress. To change this condition is the great school problem.

One of the important factors in this problem is the veneration which the public commonly has for the "course of study." How did we get our present course of study? Any one who has studied its organization cannot help coming to the conclusion that its growth (if growth it can be called) has not been natural and by accretion but decidedly artificial. Originally it was composed of what we call the rudiments. As the ideas of the people expanded, not only were the limits of each subject extended, but one by one new subjects clamored for admission; and as each new claimant arose it was deferred to, and the subject was added, a process of shortening the time given to each being gone through to make room for them all. College entrance requirements determined whether they should be admitted or rejected. The result is what we call the traditional course of study.

Our problem is further complicated by the gap that ex-

ists between the close of the elementary school course and the time of entry into a definite and permanent trade or occupation. This is a period in which much harm is done. Not only is the work of the elementary school forgotten and rendered of no effect, but habits are acquired which considerably hinder the effects of any further education that may be attempted. One or two years' education at this age would be as great as, or in ultimate value probably greater than, double the number at an earlier age, owing to the foundation that had been laid, and to a broadened intelligence and expanded powers.

It seems almost impossible to find sufficient work of a really educative character to occupy all between thirteen and sixteen who now leave the schools. This makes it the duty of the State to reduce the supply of adolescent labor, and in this way do something to minimize the physical and moral degeneration caused by work which provides neither education in the present nor economic prospects in the future.

These prospects must be considered if the education given is to be effective; but we hear frequent sneers at "bread-and-butter education," and some good people are very much afraid that we shall make our education "utilitarian." As a matter of fact, the founders of our educational system were entirely utilitarian. High schools were to fit for college, which in its turn was to prepare for the ministry. Elementary schools were for the children of the masses to teach them "to read and write and cast accounts," which, according to business men, they are not now doing.

We are told that if we make the education given in our schools practical, we shall be depriving the children of the culture that a liberal education gives; but the question is not what we would like to do if we could retain the pupils for eight, ten, or twelve years, but what we are able to do with the eighty or ninety per cent we can retain for only

four, six, or eight years. After all, what is the essential difference between cultural and vocational subjects? A subject that is cultural for one is vocational for another. We must get rid of our academic horror of the vocational and worship less at the shrine of the cultural. Chemistry to the farmer is a vocational subject, to the minister or lawyer it is cultural. Mathematics to the engineer or machinist is vocational, to the journalist or stenographer it is cultural. Wherein lies the difference? It seems to be a fact that vocational education can be made of some definite use and that cultural education, beyond the general broadening and training of the mind, cannot. Some one has said, "The education we can use is a blessing, the education we cannot use is a curse." There is no really vital conflict between the two. The curriculum can be organized in such a way as to direct the boy and girl towards the industrial, without in the slightest degree impairing, but, on the other hand, adding to the culture now imparted.

Nobody has as yet satisfactorily defined what the educationist means when he pleads for culture. It surely cannot consist in the amount of education a man has, for university students both in Canada and the United States have been known to act like "hooligans" and "toughs," and many a so-called uneducated tramp has given evidence of gentlemanly bearing and kindly feeling. As Ruskin says, "We are always in these days endeavoring to separate intellect and manual labor; we want one man to be always thinking and another to be always working, and we call one a gentleman and the other an operative; whereas the workman ought often to be thinking and the thinker ought often to be working, and both should be gentlemen in the best sense."

In the present economic condition of society the bread-and-butter problem is the great question of life for the large majority, and is one of the most logical and effective arguments that can be made. It is the manifest duty of the

State, if it be truly democratic, and if it be organized on the principle of the greatest good to the greatest number, to make the chief work of the elementary schools that of training the great bread-winner, the hand, assuming of course the self-evident proposition that the hand cannot be effectively trained without at the same time training the head.

We are told that our educational systems should prepare our children to live a worthy life, but it cannot be too often repeated that no one can live a worthy life unless he has ability to make a living. In France it used to be said that every private soldier carried a marshal's baton in his knapsack. We have modified this and affect to believe that every boy can rise to be Prime Minister or President, and have moulded our educational systems on the assumption that every boy will.

Nicholas Murray Butler has said: —

It will be a grave error to set vocational and liberal training in sharp antagonism to each other. The purpose of the former is to pave the way for some appreciation of the latter and to provide an economic basis for it to rest upon. The equally grave error of the past has been to frame a course of study on the hypothesis that every student was to go forward in the most deliberate and amplest fashion to the study of the products of the intellectual life regardless of the basis of the economic support.

The more this question of industrial education is studied, the more it will be found to have its roots in the primary schools; and until it is seriously attacked from this point a large portion of the money expended will be wasted, our efforts fruitless, the results achieved unsatisfying and disappointing, and the practical effect upon the great mass of industrial workers very little. No matter what efforts we may put forth, it is by a reorganized course of study and by longer and more regular attendance at the day schools that the best results will be accomplished.

Efforts were made to do something in this connection by

the introduction of manual training. It was expected that this subject would do much to remedy the defects even then admitted to exist. Much was expected of it, but many of these expectations have been unreasonable in view of the limited time allotted to the work. For this limitation the teachers (of academic subjects) and college entrance requirements have been largely responsible. In the average public school system one to one and a half hours a week is all that is given to manual training. When it is remembered that this time includes instruction in making working drawings, care of tools, growth, seasoning, and marketing of lumber, in addition to the actual work of construction, it will be readily seen that the manual training teacher has a serious task before him.

In many places in the United States women teachers of this subject are employed, but in Ontario and Canada generally, the regulations allow the employment of men only.

Manual training has never had a fair chance. The subject has been handicapped at every turn,—insufficient time, meagre equipment, academic opposition, public indifference, limited ability of the teacher; and yet, notwithstanding all this, a large measure of success has been achieved. No educationist or public man of any standing to-day can be found who would seriously advocate the elimination of the subject from the school curriculum. It only needs fair conditions and adequate opportunities, to demonstrate what it can do, and the aid it can render in laying a foundation on which can be erected a solid structure of industrial education.

It is not too much to say that the present agitation for industrial education has largely grown out of, and developed from, the manual training movement. This is owing to two causes,—the far-sightedness of many of the men engaged in teaching it, and its failure to directly influence industry. Almost every man engaged in the active promo-

tion of industrial education to-day has come into it from the manual training classroom. These men recognize that a reorganization and readjustment of our present manual training courses ought to be made, and can be made, in such a way as to afford a much wider industrial knowledge, and to give a much broader industrial experience.

"Art" is a subject closely allied to manual training, if indeed it is not another form of it, which has been captured by the culturists and diverted from its original purpose. It was claimed for it, on its introduction into the elementary schools, that it was the language of the industries, and as such would directly help the future worker. At the time of its entry into the schools the word "art" was scarcely invented and the term "drawing" was used, but drawing is no longer heard of. The subject has become more and more exclusively cultural in its aims and methods, and its original industrial purpose has been almost entirely lost sight of. The terms "art" and "drawing" are by no means synonymous. Art is the larger term, and as at present taught does not in many cases include the latter.

The history of art as a school subject is about as follows: First came the rigid copying from the flat with a line of poker-like stiffness, drawing of type models, no imagination, no color, no freedom; only rigid adherence to type. After about thirty years of this came a revolt; flat copies, type models, the ruler, and all instruments of precision were abolished, and free drawing, the unrestricted play of the imagination, and the plentiful use of color became the objects of instruction, and this is very commonly where we stand to-day with one or two notable exceptions.

In the reaction against stiffness, rigidity, and authority we have swung too far, and color is now the be-all and end-all of many courses in this subject. Whatever the merits and demerits of the old system, it certainly had one great advantage, that of inculcating fidelity and accuracy. Now some of the drawings, so called, that we get do not bear "the

likeness of anything that is in heaven above, or that is in the earth beneath, or that is in the water under the earth."

[A child's interest in making pretty things should not be allowed to crowd out his interest in making them right.

I do not wish to be misunderstood in this connection. The introduction of color has certainly revived interest in a subject that had grown lifeless and dead, and no course of drawing that claims to be either educational or practical, or both, could take the retrograde step of banishing it, but it should in every case be secondary to good drawing. The most brilliant display of color loses its effect when accompanied by bad drawing. The function of drawing in the elementary school, while it is educational and develops an æsthetic appreciation for beauty, should be to develop many future artisans, not a few artists, though both purposes should be kept fully in view. At present it looks as though we were trying to turn every elementary school pupil into an artist, and the attempt must in the very nature of things fail. The course must be both practical and æsthetic, training the many to become productive artisans, and all to be able to appreciate and derive pleasure from the contemplation of the great masterpieces of nature, painting, and construction. A German critic, after investigating the methods of teaching drawing in the schools of the United States, says: —

The results of the instruction, too, in the lower grades exceed all expectations. In the advanced grades, however, they do not wholly accord with this advanced beginning. While the work of the children of eight or nine years is so admirable, the pupils of fifteen or sixteen offer correspondingly little that is satisfactory. We should expect from pupils of the highest grades that in drawing from nature they would have the ability to see form clearly and to apprehend an object accurately. But instruction has failed to develop a disposition to see clearly; the plant drawings of the sixteen-year old pupil frequently present the same schematic pictures as those of the lower grades. Manifestly this is due to the fact that *the instruction wholly neglects exercises in accuracy.* One

is forcibly reminded of the desultory methods of piano instruction that plays only parlor pieces without introducing the finger exercises necessary for the systematic progress of the pupil.

The subject corresponding to manual training that has been introduced into the curriculum for girls is household science, and this has been interpreted, perhaps, even more narrowly than manual training. The broad and comprehensive term has been translated to mean "cookery," but while it is true that this is one of the most important branches of it, it by no means follows that it is the whole. The teachers themselves recognize that this is a narrow interpretation, but are almost powerless. When it is recognized that one and a half or two hours a week is all the time allowed, and that manual training and household science are the first subjects to be cut off in the case of pressure of work arising from preparation for examinations, and other causes, it will readily be seen that both the teachers and the subject are seriously handicapped.

Another problem that is one of great importance is the organizing of evening classes. Every country that has devoted any thought to the subject of industrial education, and has translated that thought into action, has commenced operations by organizing a more or less efficient system of evening schools or classes. The backbone of the English system is its evening schools, and to a less extent this is true also of Germany.

It is admitted that it is not only necessary to train those who will in future occupy our factories and workshops, but that it is equally and perhaps more important that those who are at present engaged therein should be given an opportunity to obtain that training which they were not able to obtain while they were in attendance at day schools, and which will not now come to them while tied to one machine or confined to one process during their daily employment.

Recently there has come into the minds of those en-

gaged in the organization of industrial education grave doubts as to whether the country is receiving an adequate return for the expenditure incurred by this branch of our educational system. In Canada the movement is just beginning. In the United States in certain centres, not by any means widely spread outside the large towns, evening schools have long been established. Articles have recently appeared in some sections of the educational press headed "The Failure of Evening Schools," and in some instances a good case has been made out. It would be an exaggeration to say that they have failed, but it can be said without the slightest hesitation that they have not achieved the success that might reasonably have been expected and that their importance warrants. Few will deny that in individual cases sound and solid progress is being made, but this is accompanied by enormous waste. For one who gets out of these schools all that they are capable of giving, thousands do not justify the expenditure that is being made on their behalf. Evening schools are one of the vital problems in connection with the whole question, and on their successful development and management the ultimate efficiency of industrial education will largely depend.

Their organization will differ according to the character of the town where they are to be established. The towns in which manufacturing industries furnish the chief occupations for the people may be grouped into three classes, each class constituting a problem of its own: —

1. Those towns generally small in population where there is carried on mainly one industry in which practically all the people are engaged.

2. The towns in which there are a number of small but important industries.

3. The large towns and cities in which there are two or three main industries employing a large number of the population and also a very large number of smaller industries.

Are we getting the fullest value from our schools even

from a material point of view? It is difficult if not impossible to obtain an accurate estimate of the total amount invested in educational plants and buildings in America, but we are quite safe in saying that it totals to an enormous sum, and we are equally safe in stating that the public is not getting anything like an adequate return for the amount invested. These buildings are in use five or five and a half hours a day for five days a week for, at the most, forty weeks in the year and they are closed entirely for at least two months. The length of the school day and term will be dealt with later, but even with the present organization is it not possible to get more out of our schools?

The school is, of course, primarily intended for the children, and their interests must be the first consideration, nothing being allowed to militate against those interests. But is it not feasible, without in the least sacrificing the welfare of the children, so to plan and build our schools that they may be used for extended educational and social service?

Another important consideration is the attitude of parents. The average parent is prejudiced against industrial occupations. As an illustration take the following instance. The principal of a large collegiate institute (high school) in the Province of Ontario had a boy who failed to gain his promotion, but who had done remarkably well in manual training. This school has an industrial class, the boys spending half their time in the shops of the school and the other half in academic work, more or less related to that done in the shops. The father of the boy, a prosperous foreman moulder, was recommended to put him in the shops, after a preliminary course in the industrial class. He replied that he was not going to let his son slave away his life in the factories as he had done, getting up early to breathe dusty air all day and then going home too tired to do anything except to sleep in order to prepare for a new day's toil. This is typical of the attitude of a vast majority of parents. They

desire education for their children in order that they may "rise above" the ordinary walks of life, that they may not have to work as hard as their fathers did. Theoretically they believe thoroughly in industrial education, but so far as it leads to actual work in a shop or factory it is for the son of somebody else and not their own.

We boast largely of the interest of our people in educational affairs, but after all what does it amount to? Mr. Chancellor, in his book on "American Schools," says: —

The efforts that have been made, in the cities of the United States, to interest the fathers of the school children in the schools have usually proven fruitless. The American father, whether a business manager or a clerk, a mechanic or manual laborer, is seldom deeply concerned for the educational welfare of his children. He is too busy to attend to these matters. The American mothers are likewise too busy with home affairs to interest themselves as a class in even those matters lying outside of the home that are as near to the home interests as are the affairs of the schools.

If this is true in connection with general education, which has been in operation for many years, it is still more true in regard to industrial education which in its modern form is of comparatively recent growth.

In an English inquiry into the success of evening schools the following amongst other questions were asked of a number of persons who had been engaged in evening school work for many years: "What is the attitude of parents towards evening continuation schools?" "Do they encourage their children to attend?" Seventy-five answers were received from seventy-nine persons, and every one of these replies stated that the attitude of the majority of the parents was one of indifference. On the other side of the question the president of the Textile Workers' Union of America says: —

The same keen desire is in the hearts of all parents to see their boys and girls make good, not as industrial specialists, as simply parts of a machine where nothing counts but speed and produc-

tion, but as men and women whose early training and education will equip them to grasp the higher technique of any trade or calling they may be best fitted for, to know the way a thing is done and the very best and most artistic way of doing it, *coupled with an economic knowledge of their labor.*

Another feature that further complicates the problem is the early age at which the pupils leave the elementary school. There is no question but that in the majority of cases the boy himself decides whether he shall continue his attendance or not, entirely irrespective of the wishes of his parents. The Report of the first Massachusetts Industrial Commission of 1906 says, "Mother after mother declares, 'We wanted him to stay in school.'" The average boy of to-day will take neither advice nor direction in this matter. Of course it is said that the school is to blame for this, that the boy does not think it worth his while to remain in school, and that the subjects offered do not appeal to him as being of any practical use. This is partly true, but deeper than all is the condition which has rendered the authority and direction of the parent obsolete. In this matter the parent should exercise more intelligent and rational compulsion; but compulsion in any form is abhorrent to the democratic mind. Parental discretion is almost entirely absent. Allowing a boy to decide for himself before he has the knowledge or capacity for doing so, is to place a handicap upon his entire future career.

The parent and the boy are generally at one in not choosing any industrial occupation from preference. Boys ignore as long as possible the productive side of the industries and much prefer those activities which have to do with the distribution of the product — trade and commerce. There is a common feeling among them, and unfortunately among some people of larger growth, that there is a lack of respectability in having to do anything that soils the hands. Boys do not like wearing aprons and overalls. They think it looks too much like work.

Now as a result of this sort of feeling we see young men leave the farms and the workshops and come into towns to enter some merchant's store where they can wear good clothes every day, and we see young ladies who would think it a disgrace if they could not play the piano, but who do not think it unbecoming or unwomanly to show a profound contempt for the baking-board or the broom.

The girls taking the household science course in one of the high schools in the United States recently petitioned the Board of Education to be relieved of the disgrace and drudgery of washing dishes. All this, perhaps, is not owing to a desire on their part to shirk hard work or because of a lack of physical energy. It may be owing to a perfectly natural desire which craves for the greatest possible appreciation from the world and to have the best possible appearance in the eyes of the world. Now as long as it is considered more respectable to be a clerk in a store than to be a blacksmith or a carpenter, to be an ordinary clerk rather than a skilled mechanic, just so long will the "professions" be overcrowded and the industries have to take the residuum.

Most young men would rather be second-rate lawyers or doctors than skilled mechanics; would rather be the defender in a court of justice of a notorious murderer or forger than the designer or builder of an international bridge. This is quite as much a social question as an educational one. Surely the church has a duty to perform here as well as the home and the school.

The ordinary schoolboy gets the idea from various sources that it requires no education to be a mechanic, and that brawn and not brains is required. The viewpoint of the boy must be changed. His vocational imagination must be enlarged in order to widen the area of industrial choice and hence the scope of economic success. A Report of the American Federation of Labor says, "False views and absurd notions possess the minds of too many of our

youth, which cause them to shun work at the trades and to seek the office or store as much more genteel and fitting."

If the boy who leaves school early remained in one employment until he was receivable in a definite trade, the position would not be so serious. He would, at any rate, gain habits of stability; but he drifts from one occupation to another, becoming more shiftless and less and less inclined to persistent effort and serious study. This can probably be partially cured by a larger measure of parental discipline and management.

In the United States Census for 1900 the enumerators were required to report the occupations of all children between ten and sixteen years of age who were "earning money regularly by labor, contributing to the family support, or appreciably assisting in mechanical or agricultural industry." The total number reported was 1,750,000. Of these, sixty per cent were engaged in agriculture and four fifths of them were boys. The number of children in other occupations was 688,000. Of these, 186,000 (110,000 boys and 76,000 girls) were between ten and fourteen years of age. Of the 110,000 boys, 59,000 were messenger and office boys, servants and waiters or laborers, 12,500 were employed in textile factories, and 9000 were employed in mines and quarries. Of the 76,000 girls, 50,000 were servants, waitresses, etc., 14,000 were engaged in textile factories, and 4000 were dressmakers, tailors, etc.

Even these figures do not portray the whole situation. The Government Report on the "Condition of Women and Children Wage-Earners," recently compiled by the United States Bureau of Labor, reveals startling conditions. One volume of the nineteen which constitutes the full Report is entitled "Juvenile Delinquency in Relation to Employment." This gives a study of 4839 delinquent children. Of this number a majority (2767) were or had been working children. Leaving out the 561 girls we find

the employments furnishing the delinquents to be as follows: —

Delivery and errand boys	491
Newsboys and bootblacks	449
Telegraph messengers	73
Street vendors	66
Amusement hall employees	51

More than seventy-five per cent of the delinquents studied are reported as from "fair or good homes." Only 419 of all the boys had widowed mothers and only 185 were orphans. It will be noticed that all the delinquent producing occupations are blind alleys which lead to nothing either educationally or economically. In view of these facts it is evident, first, that there is an educational need unsupplied, and, second, that further effort is required to inculcate in the minds of a large number of parents a larger sense of responsibility for the future welfare of the child.

The problem that meets us here is the training of the boy or girl who leaves the elementary school at thirteen or fourteen years of age, with the ultimate prospect of entering the industrial field. Professor Paul Hanus has said, "We are the only progressive nation which allows its adolescents — the great majority of them — to drift without systematic educational influence from the time they are fourteen years of age until they arrive at the threshold of citizenship."

Large numbers leave the elementary schools at this age or earlier, and there is reason to believe that the elementary school course could and should be finished in less time than it takes at present. Andrew S. Draper, Commissioner of Education for the State of New York, whose authority few will dispute, says: "The hard fact is that we ought to get the children well started earlier and push them along from one grade to another more rapidly than we do, and I entertain no doubt but that we ought to do the work we

do in the elementary grades, or such parts of it as are fundamental and potential, in at least one less year than we take for it."

If we are to take steps to provide further educational training for the fourteen-year-old boy, then the financial condition of the parent will have to be taken into consideration. We in the New World are in the habit of flattering ourselves by drawing comparisons between our conditions and those that exist in the Old. We are told that if poverty exists at all, it is found only in a very modified form. We are told also that every boy can get an education, and that, if he has the ability, he can climb from the bottom to the top of the so-called educational ladder. But this ladder has several rungs broken and others so badly damaged that they are scarcely safe to tread. In the report of the first Massachusetts Industrial Commission, in 1906, parent after parent declared that they could have kept their children at school had they wished to stay. How far are these representations reliable? There is a tendency in all people to exaggerate the difficulties of their social and financial conditions. It is highly probable, however, that a large number of parents are actually in need of the earnings of the boy or girl from thirteen to sixteen years of age, and that a number of the parents who make the necessary sacrifice to give their children extended training, do so at the expense of their own health and usefulness.

The Trades' Union Congress of Great Britain places first in the list of needed reforms "the State maintenance of school children." It is stated that the experience of the Manhattan Trade School for Girls goes to indicate that about one quarter of the students need some assistance, ranging from car-fare to the equivalent of a small wage, which the girls would make in trade, and which the parents cannot forego. The following extract, taken from the Detroit "Free Press" of March 27, 1912, shows a decided tendency in the same direction, and it may be safely as-

sumed that with the growth and congestion of cities this state of affairs will at least show no early diminution:

To establish a fund from which payment may be made to needy families whose sons or daughters are required to attend school, the School Board will ask that the Common Council include in the budget an extra estimate of \$10,000 if the recommendation of the real estate committee is accepted. The State law governing this was passed last year. It provides that when families are dependent on the money earned by children who are yet so young that they are not allowed to leave school, the Board of Education shall pay to the families an amount equal to that which the children would earn if employed. Several requests of this sort have been received, but the Board has no money to pay out. It is therefore making this request to show its willingness to comply with the law.

In addition to the training, along industrial lines, to be given by the school, we must also consider that which is to be given by the shop. There is a consensus of opinion that a system of apprenticeship is necessary to remedy the defects of modern industrial organization. This is shown by the numerous attempts to revive the system in a form calculated to meet present conditions. The president of the National Metal Trades Association says: —

A proper apprenticeship system is essential to the education and perfection of skilled mechanics.

The American Federation of Labor says: —

It is further recognized that the old apprenticeship system possessed many features that were uneconomic and unjust, but with the preservation of much that was good, and its application with proper blending with the modern idea of perfection in theory, it would lead to more satisfactory results. A marked tendency towards apprenticeship is taking place, and the feeling expressed by both employer and employed is that a gradual return will take place if such training is conducted sanely and advantageously to the American youth.

If this be generally admitted, we must establish a system that will give adequate and thorough preparation to the young apprentice, safeguard the interests of labor, and

give an equitable return to the employer for the capital he has invested. In the organization of industrial education the system of apprenticeship in its modern revived form must be considered as a powerful factor.

In order that the training given may achieve its object, it is essential that the trained person be placed in the position where he can best apply that training. Recent commissions and investigations have demonstrated the urgent necessity of taking some steps to prevent the indiscriminate choice of occupations by children leaving the elementary school. It is also quite clear that, if industrial education is to achieve anything like its full fruition, measures must be adopted to influence this choice of occupation in such a way that consideration be given to the ability, capacity, and predilection of the child, as well as to his future prospects in the industry. The step the boy takes at this time is a sudden and often irrevocable one. He passes in one bound from the discipline and care of the school, such as it is, to the freedom, liberty, and license of the wage-earner, and, while a child in disposition and knowledge, he is allowed to act as an adult without either advice or responsibility.

The numerous openings for child labor, the complex character of modern industry, and the limited knowledge parents have of occupations outside their own, make it impossible for a large number of them to select intelligently an occupation for their boys or even to advise them in their choice. As a consequence they are allowed to take up the first position they hear of, very often with unfortunate results. Easily found and well-paid occupations for children have no prospects, and the economic future is sacrificed for present gain. A consideration of these facts has led to two types of organization which have for their object the giving of direct vocational guidance at this critical stage.

Another important factor in our present problem is the

frequent misinterpretation by Americans of foreign systems of industrial schools. There is no more complicated subject than the study of foreign educational systems. It is difficult if not impossible for the student to project himself into the spirit and genius of the country whose system he is investigating. He finds it hard to delve deep enough to discover the real causes which have brought about the adoption of certain plans and the accomplishment of certain results. The English system of industrial and technical education was admittedly planned to follow closely the German system, yet the most cursory examination of the two will show that they are widely apart; and unless care be exercised the American people will be mistaking the shadow for the substance in their imitations of the German system.

When deputations and delegations visit American cities, they are carefully driven round those districts which contain the most beautiful residences, parks, and public buildings. They are taken in charge by guides who have previously made up their minds that the visitors shall see nothing but the best. Only the painstaking independent investigator can discover things as they really are. Much the same plan has been followed in educational investigations. Attention has been concentrated on the large towns and imposing institutions, and as a result altogether wrong impressions have been formed.

As a striking example of these wrong impressions based on superficial investigation, take the following from the Report of the Committee on Apprenticeships of the London (England) County Council: "A special feature is the close coöperation which exists in the United States between the employers and the *trade schools*. . . . In many instances the only way of entry into the workshop is through the door of one or other of these institutions." (The italics are mine.) This is evidently the result of an impression, based on hasty examination, that schools of

engineering are trade schools. Again, Mr. Mosely tells us in his report that "the aim of education in America (U.S.) is to make every boy fit for some definite calling in life." Could anything be wider of the mark as descriptive of the real situation? If this criticism were true, the present movement toward industrial education would not be at all necessary. National conceit and self-complacency tend to make us hug these misconceptions, and we accept them willingly and gladly as an accurate estimate of the real state of affairs.

Before concluding this chapter, it will be well to state what should be the aims and objects of industrial education. These may be summarized as follows: —

1. To teach a boy (or girl) how to earn a living or aid him in doing so, in order that he may live a worthy life and become a good citizen, self-support being the first obligation of citizenship and the necessary prerequisite to a wider and more useful service to the community.

2. To enable the workman to render better service to his employer, and so entitle him to receive greater remuneration in the position he at present occupies.

3. To inspire him with the ambition, and to equip him with the knowledge and skill, that will enable him to rise from his present position to a higher one.

4. To develop that industrial elasticity or adaptability which will permit him to change readily from one occupation or branch to another, should new inventions, changes in machinery, or economic conditions render it desirable.

5. To give an all-round intelligent view of the whole of a trade, and thus counteract the narrowing and blighting influence of the present minute subdivision of labor, which will probably increase rather than diminish.

6. To provide a supply of skilled labor and to lessen the great economic waste in the industries arising from the practice of stealing a trade, and from incompetence and ignorance.

Our subject is one with many phases, — complex and multiplex, — and it will have to be resolved into its component parts, and the problems of each met squarely and solved separately. In view of what has been said, the problem seems to consist of the following elements: —

1. Placing the schools and all educational organizations on a purely business basis so that the greatest possible return, both in a material and moral sense, may be secured from the investment.

2. A reorganization of the elementary school curriculum in such a manner as will

(a) give a direct industrial trend to the instruction afforded and an industrial bent to the mind of the future industrial worker;

(b) afford at least the same measure of culture as is now imparted;

(c) inspire an ambition, amongst those who have the ability to do so, to proceed to higher institutions of learning;

(d) serve to correlate school and home interests more closely so that there will be a mutual reaction.

3. The enactment and rigid enforcement of compulsory attendance laws up to the age of fourteen.

4. The exercise of a reasonable amount of compulsion in securing the attendance, for a limited number of hours each week, at approved day schools, of all up to the age of at least sixteen years.

5. Recognition of the fact that the vast majority of the industrial workers do not enter a high school, but leave the elementary school at thirteen or fourteen years of age and receive no further systematic educational training.

6. The provision of a type of school which shall train the boy and the girl from thirteen or fourteen to sixteen years of age, directly for the industries, and to see that financial considerations do not prevent the attendance of any who are desirous of taking advantage of the instruction offered.

7. The reorganization and revitalization of evening industrial continuation schools for the purpose of giving definite and pertinent instruction to those engaged in the industries during the day, and the making of such arrangements that the conditions of their labor will permit their attendance at the schools provided.

8. The coördination of all parts of the educational system from the kindergarten to the university, so that every individual may be able to obtain that type of education, both in content and extent, best suited to his needs and requirements.

9. The education of both the parent and the boy with a view of showing them that continued education is worth while, materially, morally, and spiritually, and the inculcation of the idea that industrial occupations are to be desired and sought rather than shunned.

10. The adaptation, rather than the adoption in their entirety, of the plans and schemes of foreign countries.

11. The development of a rational system of apprenticeship in all industries to which it can be economically and beneficially applied.

12. The provision of a measure of expert guidance so that an intelligent and wise choice of an occupation may be made.

PART II
THE METHODS

III

THE ELEMENTARY SCHOOLS AND THEIR REVITALIZATION

IN view of the large expenditures previously mentioned, it is not unfair to regard the schools as a business concern, in which certain sums of money have been invested, and from which the investors (in this case the community at large) have a perfect and undeniable right to expect adequate returns. In the management of an ordinary business many economic tests are applied which cannot, from the nature of the case, be applied to the schools, but there are some which can and might be so applied with beneficial results. Amongst these are: —

1. An estimate of the value of the finished product.
2. Installation of an equipment best designed to turn out the product required.
3. Use of the equipment to its maximum capacity, all the working hours of the day and all the working days of the year.

What is the value of the finished product of the primary schools? Do these schools turn out any finished product? Were they designed to turn out any finished product? As a matter of fact, they were never intended to produce a finished product of any kind. Their purpose was, and still is, to form one stage of the educational progress from the kindergarten to the university. It is perhaps unfair and unreasonable, owing to the limited time available and the immaturity of the pupils, to expect anything of the nature of a completed article, but it is surely quite legitimate to ask that the schools should adequately prepare for the next step, and that that step should be one which the large

majority of the pupils are able and willing to take. In the present economic and social condition of the community the step available to the majority, after leaving the elementary school, is not entry into higher institutions of learning.

In the building of all new schools, particularly in towns and cities, the basements should be so arranged that they may be effectively used for various purposes, including those of industrial education. These purposes should be definitely determined before the building is erected. It is not generally wise to advocate the use of basement rooms for educational purposes. The prevalent impression is that a room in a cellar, absolutely unfit for the teaching of any other subject, is good enough for a shop. This has done something to make the average boy look upon practical industry with contempt, and as something to be avoided if possible. But it is essential that the whole of an expensive building shall be economically used, and when planned for a definite purpose, which is previously determined, all the conditions required can be secured as easily in the basement as in any other part of the building. Of course in this planning the men who are to teach in the rooms and who know the essential requirements should be consulted. The ordinary architect's idea of suitable classroom and workshop accommodation is not generally reliable.

Every school should have an assembly room that could be used not only for day-school purposes but for evening lectures, entertainments, and other social functions. This room should be provided with an optical lantern and an opaque screen. If the room have shutters or opaque blinds it may be used for illustrated lessons in geography, history, and many other subjects in the daytime as well as in the evening. For evening use it is a decided advantage to have an entry directly from the street into the lecture room, in order that the remainder of the building may be kept closed, if necessary.

The building should be open every night in the week and be made a real educational and social centre for the whole neighborhood. A gymnasium is also a useful feature of the equipment, and if the classrooms are fitted with movable furniture the purposes to which the whole building may be put will be largely increased. A study-room for those whose home surroundings are not conducive to quiet work has in many cases proved a desirable addition. During the long summer vacations when the schools are usually closed, vacation schools might be held. Many teachers would be glad to engage in this form of work. Continuation sessions for those children who failed to secure promotion in the day schools have proved most successful in some districts. If plans of this character were adopted, much greater returns would be obtained from the sums invested.

In view of the large numbers leaving the elementary schools at or before the completion of the course, and the economic folly of sacrificing the interests of the eighty per cent to those of the twenty per cent who proceed to the secondary schools, it becomes proper to inquire how the education given can be made more directly beneficial to the greater number. The dominant life of the people should be the basis of the whole organization. If the schools cannot be managed so as to give equal opportunities to all, then, according to all principles of democracy, they should be so organized as to give adequate opportunity to the majority. This can really be done without in the least sacrificing the interests of the minority. The measures called for by the existing situation are: —

1. Reorganization of the course of study with the object of giving to it a direct industrial trend, and a decided industrial bent to the mind of the boy.

The very word "industrial" is suggestive of work, but school and work are not at present synonymous terms. The atmosphere of the school discourages work. Every

subject taught and the methods adopted are carefully designed and framed to remove all difficulties. As long ago as 1889 the following passage occurred in an educational magazine, and the situation has not materially changed since: —

Even the very branches of the old-fashioned school days are now sweetened (?) to the mental appetite by titles that savor strongly of Mother Goose and the days of baby talk. Arithmetic is now "number work"; geography, "place lessons"; grammar, "language lessons" or "ear culture"; spelling, "talking with a pencil"; reading, "what does the story say?" or "sentence picturing" or "talking through the eye gate." The road to knowledge is no longer rocky and uneven, it is boulevarded in the highest style of the art. In short, the whole art of teaching in the public schools is "wheedling children into knowledge without their knowing it," bringing everything ready-made to the mind, sugar-coating every difficulty, turning the teacher into a variety show of "sounding brass and tinkling cymbal," and pleasing the child with a rattle or tickling him with a splint. The psychologizing philosophers who are responsible for such stuff in the public schools ought to learn at once that the human brain also works out of school, and that many things now taught (?) therein are sure to be learned by the education of the home, the street, the playground, by association and by contact with men and outside things. To spend time over matters in school, which, when the school gives right habits of work, are sure to be learned out of school, is sheer folly, a frittering of energy, a sheer waste of time. These men of hobbies ought also to know that when the principle of making easy and interesting is pushed to the length of not requiring pupils to learn anything but what has been made easy and interesting, one of the chief objects of education is sacrificed. And furthermore the new system of teaching, as it seems to me, is training up a race of men who will be incapable of doing anything which is disagreeable to them. The sooner such methods are swept out of the schools the sooner will the latter regain their place in the public regard and confidence.

Of course in all this there is gross exaggeration, but it contains elements of truth and appropriateness which we shall do well not to ignore.

The work done in the elementary schools is governed

very largely by the time at the disposal of the teacher, but theorists in education seem to have lost all idea of the limited time available and have argued as though that time were unlimited. That the time is limited is true, but if the curriculum were modified and reorganized, this limited time could be considerably extended. With a curriculum hygienically, logically, and educationally planned, an extension of the school day would work no hardship to the children in the last four grades. Are more than two months' holidays really necessary? At present it seems to be nine months' rush and three months' rust. With properly ventilated and cooled rooms and a curriculum of the right kind, there would be far less danger to health and general morale in conducting the school continuously than is incurred in the practice of allowing children to run wild for two months with generally very little control.

Besides the loss of actual time, every teacher knows, whether she will admit it or not, that it takes from two weeks to two months to bring the pupils back to the educational condition in which they were when the schools closed for vacation. The educational loss that occurs during this prolonged vacation probably accounts in a very large measure for the general complaint of each grade teacher, that the work of the previous grade has been ill-prepared. I well remember the dread with which, as a teacher in England many years ago, I went back to school after vacation (only one month) lest the government inspector, a person much to be dreaded in those days, should choose the first week after the reopening, for his annual inspection.

Now let us take the various subjects in the school curriculum with the object of showing what is meant by giving to them an industrial trend.

Certainly reading, writing, and arithmetic can be taught in such a way as to turn the thoughts of the child in a practical direction.

Stories of manufactures, descriptions of the making of

common objects with the use of which the children are familiar, the lives of inventors and scientists, as well as accounts of the rise of various industries, could all be used after the third or fourth grade, and the art of reading as well taught by them as by the scraps and excerpts now generally in vogue.

While the average type of newspaper can hardly be advocated for general school use, why should there not be published in every State or Province a school newspaper once a week. This might treat of current events, matters of State and city government, educational affairs, healthy amusements, and a number of other things that boys and girls get in an objectionable form from the ordinary newspaper. One sheet of this paper might be devoted to purely local affairs. In the sixth, seventh, and eighth grades extracts from Ruskin, Morris, and the other great industrial authors would prove of service in this connection.

Writing consists of two parts, penmanship and composition. The former will continue to be taught (where it is taught) in the traditional way, but the old copybook maxims might well be replaced by industrial ones which would teach the same moral truths. In teaching composition and essay-writing, the field of industry offers unlimited opportunity. Composition should always be written out of the fullness of knowledge, and while the æsthetic and beautiful ought by no means to be ignored, industrial subjects should be given prominence. There is as much beauty in a well-designed and constructed building as in a gorgeous sunset, though it is of a different character and we have not been trained to see it.

There would not be much harm done if all formal grammar in the elementary school were abolished and the subject taught entirely through composition; visits to factories, descriptions of manufacturing processes, the great stores, shops, and machines, the use of tools and how to

make things, afford better subjects for composition than many of those usually given.

All arithmetic should be taught as graphically as possible, and in view of the competition and struggle of modern industry few subjects of school instruction have more direct bearing on the future career of all children than the art of calculation. It is he who is quickest and most expert in this respect, whether in the market, workshop, warehouse, or office, that has the greatest prospect of success, and though "ready reckoners" are common, yet the art of rapid calculation is indispensable.

We are, of course, reminded here that our future lawyers, doctors, and ministers study mathematics for intellectual culture, but we cannot help thinking that some of them might well have a little less mathematics and a little more training in the art of lucid expression and public speaking.

The French Revolution was responsible for many things both good and bad, but one of the greatest benefits ever conferred upon the French people was the abolition of the old monetary system and weights and measures, and the introduction of the present metric system, which has done much to facilitate trade and commerce, and to simplify arithmetical calculations, thus saving a vast amount of time and money. No Frenchman would think of restoring to the school curriculum the discarded system, in order to give additional practice to the child in arithmetical calculation.

In our schools we could do quite well with a less amount of complex and continued fractions, circulating decimals, puzzles, catches, and other academic problems, never met with outside the classroom and the arithmetic book. In place of these we might have more questions and problems framed in the language and phraseology of the market, the shop, and industry in general, such as current prices of goods, making out estimates for work (current rate of

wages), earnings of workmen and tradesmen, fluctuations in wages, etc.

As a practical example of what is meant, take the "Ludlow Textile Arithmetic," a volume of 122 pages. In this work every problem has a direct application in the mill, mill terms are used, and much information is given relating to mill processes and materials; but with all this, arithmetic is taught, and at least as much culture and mental training are obtained by this method as by using problems that have no life connection. A manual of this character could be prepared for each trade or group of trades, and a public school arithmetic might contain a selection from each. This book may be considered as marking an epoch in the teaching of arithmetic for practical purposes. It treats arithmetic industrially, while at the same time retaining all the mental gymnastics that are really necessary. Good as the authors of the book have made it, they have not been able to rid themselves entirely of the baneful influence of academic tradition, for they state in their preface that "fractions have been treated in detail, although they are used to a limited extent in the mills."

When science is taken it should be industrial. Chemistry should be related to agriculture, the manufactures, and the activities of the household; physics and mechanics to movements of machines, mechanical motions; electricity applied to practical purposes; and drawing to every form of industry in which it is used.

We are told by the culturists that the formal aim in education should be considered more important than the material aim. There are many university graduates who are comparative failures in business and industry and many cases of learned men who are as ignorant as babes in the practical affairs of life. I am acquainted with a very estimable man who holds an M.A. degree from a world-famed university, and who is learned in Greek, Latin, Hebrew, and all the "ologies." He will sit wrapped in his books, let

the fire die out, wonder why he is cold, and yet not have the practical sense to get up and put coal on.

Take next the teaching of geography. Much of what is taught at present is "useless ballast." Why do we require information about all the rivers and their tributaries? If ever in practical life we mention rivers, it is either when they are navigable, and thus of use to industry, or cause trouble and danger by floods. The bulk of the geography required for use is mercantile, and attention might be concentrated on that. Natural products, places from which they come and to which they go, ports and harbors, these are matters of interest and of practical importance. Suppose we make more of the great railways and methods of transportation. It is not too much to say that all the geography ever required for practical purposes can be logically and scientifically evolved from the great question of transportation.

As a rational method of teaching history applied to a specific industry, take that adopted in the school of the Ludlow Manufacturing Company, Ludlow, Massachusetts. This is a school situated in a small town which is devoted almost entirely to the prosecution of the textile industry. The history taught is evolved from the work carried on in the mills. The following are some of the headings under which the instruction is given: the methods of clothing adopted by savage races; the development of the industry including modern textile machinery and the steam engine; general industrial development in England and the United States; the home industry stage and the growth of the factory system and a comparison of the factory acts of England and the United States. This is history of a most vital and intellectual character.

The science is also definitely related to the work in the mill. In physics the pupils examine and grade fibres, use the calibrating scales, measure and weigh rove and yarn, test the strength of fibres and make tests for moisture.

From such experiments as these the public schools may learn much.

In the poorer quarters of the large cities a number of the pupils are engaged in work of various kinds outside of school hours and during vacations. This work frequently offers an excellent method of approach for practical training of a very intense kind. With reference to this Dean Davenport says: —

Does a boy sell papers after school hours? Why should that fact not be officially known and recognized as a factor in his education? Why should he not report on it regularly — the number and kinds of papers sold, the place and the customers, whether regular or special, cost and profit, together with the disposal of the proceeds?

The Superintendent of Public Instruction for the State of Nebraska has recently issued a letter to his school officers and teachers. In this he describes a plan which is being followed, with much success, in several of the schools in the State. The plan is based on the assumption that there should be an intimate connection between the work of the school and that of the home. He contends that the school should give credit for industrial work done in the home. The home duties and the amount of school credit given therefor in the Spring Valley School, a country district in Polk County, are these: —

Building fire in the morning, five minutes; milking a cow, five minutes; cleaning out the barn, ten minutes; turning cream separator, ten minutes; splitting and carrying in wood (twelve hours' supply), ten minutes; cleaning horse (each horse), ten minutes; gathering eggs, ten minutes; feeding chickens, five minutes; feeding pigs, horses, or cows, five minutes; churning butter, ten minutes; making butter, ten minutes; blacking stove, five minutes; making and baking bread, one hour; making biscuits, ten minutes; preparing breakfast for the family, thirty minutes; preparing supper for the family, thirty minutes; washing and drying dishes (one meal), fifteen minutes; sweeping floor, five minutes; dusting furniture (rugs, etc., one room), five minutes; scrubbing floor, twenty minutes; making beds (must be made after school),

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each bed five minutes; washing, ironing, and starching clothes that are worn at school, each week, two hours; bathing, each bath, thirty minutes; arriving at school with clean hands, face, teeth, and nails, and with hair combed, ten minutes; practising music lesson for thirty minutes, ten minutes; retiring at or before nine o'clock, five minutes; bathing and dressing baby, ten minutes; sleeping with window boards in bed room, each night, five minutes; other work not listed, reasonable credit. Prizes are given to the pupils earning the most credits.

The conditions and rules of the contest are given below:—

1. No pupil is obliged to enter the contest.
2. Any pupil entering is free to discontinue at any time, but if any do so without good cause, all credits earned will be forfeited.
3. The parent or guardian must send an itemized list (with signature affixed) to the teacher each morning. This list must contain the record of the work each child has done daily.
4. Each day the teacher will issue a credit voucher to the pupil. This voucher will state the total number of minutes credited to the pupil on that day for home work.
5. At the close of the contest, pupils will return the vouchers to the teacher, the six pupils who have earned the greatest amount of time per the vouchers, receiving awards.
6. The contest closes when the school term closes.
7. Once each month the names of the six pupils who are at the head of the list will be published in the country papers.
8. Ten per cent will be added to the final examination results of all pupils (except eighth graders) who enter and continue in the contest.
9. When the pupil has earned credits to the amount of one day, by surrender of the credits and upon proper application to the teacher, he may be granted a holiday, provided that not more than one holiday may be granted to a pupil each month.
10. Forfeitures—dropping out of contest without cause, all credits due; unexcused absence, all credits due; less than ninety per cent in deportment in one month, ten per cent off of all credits due.
11. Awards—The three pupils having the highest credits, \$3 each; the three having second highest, \$2 each. The amount awarded will be placed in a savings bank to the credit of the pupil winning it. The funds out of which the awards will be made are provided by the school district board, from the general school funds.

Every child in the school (thirty-one in number) entered the contest and faithfully kept up the home work throughout the year. Here are two samples of reports as sent in and signed by the parents: —

HENRY DAVIDSON, April 17, 1912.

	Min.
Milked cows	20
Curried horses	10
Hunted eggs	10
Fed chickens	10
Fed pigs	10
Fed horses	10
Fed cows	10
Cut wood	10
To bed before 9	5
	<hr/> 95

{ (Signed) MRS. DAVIDSON.

EVANGELINE JENNINGS, April 16, 1912.

	Min.
Prepared supper	30
Washed and dried dishes	15
Gathered the eggs	15
Fed the chickens	5
Put separator together	10
Turned separator	10
Made one bed	5
Cleaned my teeth	10
Retired before 9	5
	<hr/> 105

(Signed) MRS. JENNINGS.

The parents are enthusiastic over the results. They, the teacher, and the pupils are working together as a unit, and here at least the problem of an intimate correlation between the school and the home seems to have been solved. The teacher, Mr. O'Reilly, says: —

This contest plan ought to be contagious, for it is the best thing I have ever tried in the way of getting the children completely in sympathy with both school and home duties. It is not my intention to give full credit for time necessarily spent in home duties. I have explained to the children that it is best to go out into the world expecting, if necessary, to give more than they get. I am planning my forfeitures with the good of the school in view. The plan is an agreement between the pupil and myself. If he fails to live up to his part of it, he learns that this failure works a real hardship upon him. Perhaps I am teaching some practical law here. The plan of awards has started them upon a commercial future and has resulted in my having to tell them all about savings accounts. The plan is going without a hitch.

2. We have now dealt with the reorganization of the elementary school curriculum, with special reference to the methods of treating the various subjects. The next step

called for is the introduction of more handwork of a vital and definite character. This should not be restricted to grades seven and eight, but, commencing with grade one should permeate the whole organization. W. E. Roberts, in the "Manual Training Magazine," aptly states the case as follows:—

One of the most surprising facts in connection with the history of education is the almost universal failure of educators to recognize the significance of activity as a factor in educational work. Three truths incident to human advancement stand out with perfect distinctness: First, that the progress of civilization has paralleled the development of certain activities or occupations in which hand expression is the dominant factor; second, that the significant effective advance of society to-day is expressed very largely in terms of action — through mentally directed bodily activity; and third, that the natural tendency of the child is to express himself concretely — by doing. And yet, despite these truths, our public school courses and methods fail almost universally to recognize the great factor of activity in the development of the child.

Activity should have an important place in the work of the schools, not as a separate course added to, and apart from, other subjects, as drawing and manual training have largely been, but as the unifying element, the basis of other school work. The term "activity" also should have a broader significance than that which comes within the confines of the occupational work of the schools alone. The actual life of the child should be brought into the service of the schools, and every day of the pupil's life, in school and out, should naturally present problems, the solution of which will demand a knowledge of what is essential in the so-called academic subjects. School work will thus be vitalized, for the pupil will find knowledge desirable because immediately necessary to success in affairs that appeal to his interests.

3. The school library lists should be revised so as to include stories of industrial, agricultural, and commercial life, lives of inventors and the history of their inventions, and the thousand and one things about the practical life around them that boys and girls will be the better for knowing. Of course, we shall be told that a reading book exists

for the purpose of teaching pupils to read and not for the purpose of giving them information; but if reading is taught properly, the matter read will be understood, and during the process much information will be absorbed, and why should not the information thus gained relate directly to the life to be lived and worked?

4. Systematic instruction relating to the character, scope, purpose, and opportunities of the various trades and industries should be given in the higher grades.

5. Expert advice and assistance should be available at the close of the elementary school course regarding the desirability of continued education or the choice of a trade. If properly treated, no question can be made of more vital interest to a boy than the means by which his livelihood is to be secured.

6. Visits should be paid, under proper direction, to local factories and industries. These industries should be previously described, in order to prevent aimless and purposeless wandering. The observations made might well be used afterwards as the foundation on which composition exercises are to be written.

7. During the last year of the course careful inspection of any trade or industrial schools in the neighborhood should be made and the advantages of attendance at such schools pointed out. This is the plan followed in Milwaukee in connection with its School of Trades. Illustrated pamphlets were prepared and distributed. The seventh and eighth grades of forty-two separate district schools visited the School of Trades on certain specified days. The visit was made thoroughly and systematically. Every boy now knows what the school has to offer him, and he also has information which will enable him to make an intelligent choice either of a trade or a continuation school.

8. Permission should be granted to local authorities to modify the curriculum in order the better to adapt it to local needs and requirements. Uniformity has its dangers

as well as its advantages. This, of course, should be done under the direct supervision of State or Provincial officers.

9. More visual instruction should be given by the aid of the stereopticon. One striking feature of the American town to-day is the ubiquity of the moving-picture show, and from its popularity and success we can surely take a lesson. This form of amusement is here to stay, and, instead of agitating against its baneful influence, efforts should be made to capture it for educational purposes. The interior workings of the factory, manufacturing processes, the working of great government departments, natural history, travel, historic and current events, are all fit subjects for use in this connection.

10. There should be adopted an accurate system of vital statistics which would have every child accounted for, his abilities charted, and other necessary information recorded. This would enable each succeeding teacher to render the best service, based on an individual knowledge of each pupil.

If new plans of the above character be adopted, attention will have to be given to their development in the institutions for training teachers, and serious efforts must be put forth towards securing more male teachers. This last is primarily a question of the salaries paid. As long as the opportunities in business life are so great, and the salaries so much higher than those that can be obtained in the teaching profession, so long will the supply of male teachers be deficient, and the teaching profession be used as a stepping stone to more highly paid occupations. Time for the adoption of the new methods in the normal schools may be obtained by omitting much of the psychology, child study, and the history of education now imposed and for which the majority of the embryo teachers find very little use.

If the primary schools were revitalized somewhat along

the lines indicated, they would be able to offer a training that would be of equal advantage to the boy who has to go to work immediately on leaving and to the boy who is able to take further instruction. A real foundation would be laid for further training, either vocational or cultural. A sound body of practical knowledge would be imparted. An industrial bias would be developed and an intimate relationship established between the school and the affairs of practical life, that would be beneficial both to the schools and to the pupils.

Let us now consider briefly the question of compulsion. It has already been pointed out that the present laws are not enforced. The test of a law is its execution, and no matter how theoretically perfect the laws on the statute book may be, that nation is uncivilized and without law if those laws are not carried out. The rigid and impartial administration of the present laws would do much to extend the sphere of influence of the primary schools. Assuming a reorganization of the course, the adoption of new methods, and the enforcement of the present laws, then the raising of the school age is perfectly justifiable. The chief argument against this is the possibility of hardship to the parent and the home, owing to the loss of the earnings of the fourteen- to sixteen-year-old boy or girl. This could probably be avoided or considerably minimized by the establishment, under proper safeguards, of a generous scheme of scholarships and maintenance allowances. Educational authorities are coming slowly, and the practical man of affairs rapidly, to the conclusion that to spend many millions on primary education and then to lose all control of the child both mentally and morally, to cast him adrift, as it were, to sink or swim, is, from the viewpoint of economics, an intolerable, wasteful, and extravagant policy, and suicidal to the moral and intellectual life of the nation.

IV

MANUAL TRAINING: ITS SUCCESSES, ITS FAILURES, AND ITS REORGANIZATION IN RESPONSE TO PRESENT CONDITIONS

No treatment of the subject of "industrial education" could be considered as even partially complete without a close examination of what is known as the "manual training" movement. The name is unfortunate for various reasons, but it is probably too well established to make a change either possible or desirable. There are many kinds of hand training, and unfortunately the possession of one kind of dexterity does not imply that of another. If this were so, then would cricket, basket-ball, tennis, etc., be most useful forms of manual training. No satisfactory definition of it has ever been given. To one teacher of the subject it means one thing and to another something entirely different. When men who have studied the subject for years are at variance, how can it be expected that the ordinary individual, who takes only a casual interest in educational affairs, will have a clear conception of what the term connotes?

The subject, like most other educational reforms, was introduced into the schools from the top — the manual training high schools, mechanic arts high schools, and technical high schools. These schools were originally expected to train the higher grades of industrial workers, and judged by this standard they have miserably failed. They have been a sop and a fraud as far as definite industrial training is concerned. They have been attended in the majority of cases by those who, in any event, would have proceeded to a high school and, therefore, their estab-

lishment has not very materially increased the high school enrollment or affected the elementary school population.

No opponent of these schools can deny that they have done good and valuable cultural work, but as a means to definite vocational and industrial training they have proved a bitter disappointment. Generally speaking, they have given all, or nearly all, the cultural and classical studies that have been offered in the ordinary high school, and have simply added work with hand and machine tools, and mechanical drawing, to the ordinary curriculum. Large sums have been spent on the most elaborate buildings and costly machinery, while the same practical results could have been accomplished with an expenditure of less than half the money.

From the manual training high school the subject forced its way into the elementary school between 1887 and 1890, and one of the greatest hindrances to its growth and extension has been the exaggerated ideas that were formed as to the results to be expected from its introduction. Too much has been claimed and too much anticipated. When we review the energy that has been put into the propaganda, and the money that has been spent, the conclusion is forced upon us that a much more extensive adoption of manual training should have been the result.

The subject has not been taken seriously by the people, who in the last analysis determine educational organization and practice. It cannot be denied that, properly taught and organized, manual training has a decided place in any educational system, and that that place cannot be filled by any other school subject hitherto devised. With a reorganized curriculum its function would become still more important.

The time has now arrived when it will be the truest educational and financial economy, and in the best interests of all concerned, to review the situation and attempt to discover the comparative failure of this most important sub-

ject to make a place for itself in every school system in the country. The subject is here to stay. Real educationists and industrial workers who have studied the matter closely and sympathetically are justifiably optimistic, but rational optimism never shuts its eyes to the truth and always welcomes any critical investigation undertaken with the object of showing the road to greater success.

The famous Massachusetts Commission, in investigating the subject of industrial education, did not consider it necessary to devote more than half a page in its Report to the subject of manual training. This is all the more remarkable when it is considered that Massachusetts is a state and Boston a city that together have done more to develop a rational system than probably any other area in the world. The Report says:—

The wide indifference to manual training as a school subject may be due to the narrow views which have prevailed among its chief advocates. It has been urged as a cultural subject, mainly useful as a stimulus to other forms of intellectual effort — a sort of mustard relish, an appetizer — to be conducted without reference to any industrial end. It has been severed from real life as completely as have the other school subjects. Thus it has come about that the overmastering influence of school traditions have brought into subjection both the drawing and manual work.

The only consolation the manual training advocate can obtain from this oft-quoted opinion is that manual training is classed with other school subjects and that all alike are accused of being “severed from real life.” There is also a tacit admission that a relish was necessary to make the ordinary school subjects palatable.

The arguments urged for the introduction of manual training were deliberately designed to satisfy labor organizations. It was loudly proclaimed that the subject had nothing to do with teaching a trade, that it had no connection with industry, and that it would not predispose boys to enter mechanical pursuits. With the proposition that

manual training does not, cannot, and should not attempt to teach a trade, we can all heartily agree, but the ideas that it has no connection with industry and that it will not predispose boys to enter mechanical pursuits, will not to-day find such ready acceptance. If manual training cannot be justified on the two latter grounds as well as on the purely cultural side, then it should have very little place in the training of boys and girls — the eighty or ninety per cent who get no further training than the elementary schools can give. Superintendent Maxwell, of New York, has said: —

The attempt now being made in some quarters to separate manual training from industrial training will prove a dismal failure. It is only through manual training that we are able to discover those who have any aptitude for mechanical pursuits.

Our industrial training should begin in the public schools. It is there, and there only, that the pupils can have given to them an industrial bias and bent, which will lead them to consider productive industry as a profitable career and to investigate the prospects that it has to offer them. It is there that the erroneous ideas they have regarding industry in general can be corrected, and if our industrial education is to have a solid foundation the effect of a sound scheme of manual training cannot be overestimated. ✓
Though Germany has developed its scheme of industrial education without manual training, it does not follow that we are compelled to do the same. Indeed, if we are to have a coördinated system suitable to our industrial conditions, we cannot ignore this part of it. The fact is 'that we can retain and even increase all the cultural training that the most ardent advocates contend for, and at the same time make the subject give a direct help to the industrial development of the boy or girl. President Eliot has said, "If a man practice blacksmithing studiously or agriculture thoughtfully, he is getting culture."

The foes of manual training have been those of its own

educational household. It has had to fight its way in the face of bitter opposition. Educational traditions were outraged, and therefore all those who had been reared on those traditions marshaled their forces, went forth valiantly to do battle, and in the majority of cases won the fight they waged. In many places manual training has been forced into the schools before public opinion was ripe for it, and as a consequence has received indifferent support and bare toleration. The idea that education could be given only through the classics long held sway: even mathematics and science were awarded tardy recognition; and it was really too much to expect that another subject would be allowed equal place with either classics or science. Owing largely to this academic opinion, that manual training was not an educational subject, it has had scant recognition in the public elementary schools and still less in the ordinary high school.

Even in those places where the subject has been introduced, it has never been an integral part of the course. It has simply been regarded as an additional subject, and no connection has been established with the remainder of the curriculum. The grade teacher held aloof, and the manual training teacher placed himself on a pedestal and refused to have any connection either with other school subjects or practical industry. Jesse D. Burks, of the Philadelphia Bureau of Municipal Research, says: —

With a few gratifying exceptions the hand work of the schools is a fungus growth on an otherwise ill-proportioned and misshapen curriculum, which needs not so much to be pruned and trained as to be uprooted and replaced by a more vigorous and more productive plant.

The methods adopted have been in too many cases foreign to the shop, and have been such that, if a boy used them in the shop, he would be at least reprimanded by the foreman. I have visited exhibitions where boys have been at work giving practical demonstrations of manual training,

and have stood and listened to the comments of artisans and mechanics, and in the majority of cases these comments have been the reverse of favorable. Shop methods can be adopted after a certain amount of preliminary work has been done, without detracting from the educational and cultural value of the subject.

The development of manual training has been rather peculiar. First, we had the type exercise, where the boy had to make a joint about which he knew nothing, and cared less. I have seen piles of these joints, so little thought of by the boy that he would not take the trouble to carry them home, and they were consigned to the furnace. Next we had the sloyd influence, which at least infused a certain amount of interest and inculcated the making of useful objects, though the mistake was made of supposing that the "system" consisted of the actual models made in Sweden, and that any departure therefrom would destroy the continuity of the whole scheme. In addition to this, sloyd insisted upon accuracy (a variation of three millimetres from the drawing being sufficient to cause the rejection of a model), a lesson which is yet required in much of the work done. Then came the craze for "originality," "inventiveness," "self-expression"; and in the name of one or other of these we have had perpetrated objects which have caused derision amongst those who know good craftsmanship when they see it. It was thought, by allowing a boy to make something entirely beyond his executive capacity, that his "self-expression" would be developed, his "inventiveness" stimulated, and his "originality" encouraged. It did not at all matter that the joints gaped, that the angles were far from right angles, or that the object was ill-fitted to serve the purpose for which it was designed. This striving after "originality" reminds one very forcibly of Robinson Crusoe's first attempt to make a boat. "I went to work upon that boat the most like a fool that ever man did who had any of his senses awake. I pleased myself with the design

without determining whether I was ever able to undertake it." The tendency at the present time seems to be in the direction of large pieces of furniture, in many cases entirely beyond the capacity of the boy. In some instances the jointing and machining of large pieces is done at the mill, an entirely reprehensible proceeding.

In the higher grades of the elementary school the work has been too much restricted to wood, and woodwork in the majority of cases has no more claim to monopolize attention than plumbing or bricklaying, gasfitting or tinsmithing. Whether regarded as a cultural subject, or as an industrial subject, or, as it really is, a combination of both, as much cultural or industrial training can be obtained through the medium of a number of other materials as can be acquired from woodwork. Again the woodworking trades provide only about one tenth of the desirable openings in mechanical pursuits.

Probably there is no more vital cause for the limited extension of manual training than the circumscribed ability of the teachers employed. No reference here is intended to intellectual ability, which in nearly all cases is unquestionable, but simply to industrial skill and knowledge. Professor Frank M. Leavitt, in his book, "Examples of Industrial Education," says:—

The fact is that educational authorities very early set up scholastic requirements for the teachers of the new subjects. Before a man could teach machine-shop work in a high school he had to pass an examination in English and American literature, algebra, demonstrative geometry, a foreign language, etc., etc. The result was that in time the work fell into the hands of men who were trained in the traditional school subjects, rather than in the practical work which they were to teach. They knew a foreign language, imperfectly, but they knew little or nothing of the universal language, drawing. They knew demonstrative geometry, but little descriptive or applied geometry. They knew something of algebra, but they never by any possible chance made use of it in the shop, and were of course entirely unfamiliar with shop formulæ. To-day the manual training work is condemned by the

"public," the manufacturers, and the labor leaders as being useless as industrial training and the teachers as being incapable of conducting or of understanding the purpose of real industrial schools. While much of the criticism is unjust, the lesson is evident.

The ideal teacher of this subject is a man (not a woman) who possesses academic knowledge, teaching ability, and mechanical skill, and it is very difficult to say which of the three is most important. The educationist stresses the academic and intellectual side, while the mechanic stresses the industrial, and largely ignores the intellectual. The real solution, as usual, probably lies between the two. In reference to this question the Report of the American Federation of Labor says, "Experience has shown that manual training school teachers without actual trade experience cannot successfully solve this great problem." It is only fair to point out here that all the progressives in the ranks of the manual training teachers fully recognize this and are taking steps to acquire this shop experience, which is now considered vitally necessary.

Convinced of the importance of securing the right kind of teacher, the importance of providing teachers for industrial schools, and the advantage of industrial experience to manual training teachers, the Province of Ontario has recently drafted new regulations to accomplish these ends. These provide —

1. One year's training at a normal school in the art and science of teaching.

2. One year's training in the Macdonald Institute, Guelph, in the practice of manual training.

At the conclusion of this two years' course, an interim certificate is granted which is valid for two years. This is made permanent on the conclusion of two years' satisfactory service in one of the schools of the Provincial system and the submission of reliable evidence of two months' employment in an approved shop. The certificate thus

granted is known as an "ordinary" certificate. It may be raised to a "specialist" certificate after twelve months' employment in an actual shop.

It has been said that the advocates of temperance have done more injury to their own cause, by their intemperate advocacy, than has been done by their opponents, and probably this is true to some extent with regard to manual training. We have made exaggerated claims for it, and these claims have failed to materialize, though it is probable that the majority of them would have been justified by the results had the conditions been different. We have urged that it would keep boys longer in school. Has this been the case generally? What boy who hates books and ordinary school subjects will tolerate twenty-four hours' work a week at them for the sake of getting an hour and a half at manual training? Is it reasonable to expect it? It has been claimed that manual training will help every other subject in the school curriculum. So it will if given an opportunity, but when the boy leaves the "centre," that is the last he hears of the subject for another week. In a number of places what is known as the "centre system" is adopted, that is, a room is equipped in some convenient school and the pupils from various schools in the vicinity attend at certain specified hours. Every school should have its own manual training shop, which should be sufficiently used to justify the expense of fitting. This would avoid the loss of time in going from school to shop.

The ordinary grade teacher has taken little interest in the work, and the pupils themselves have had no encouragement to regard it seriously. I know of one instance where manual training and household science have been established for four years and the principal of the school has never been inside either room. As a consequence, notwithstanding the ability of the teachers in this particular case, the pupils do not look upon the work as being of much value, or as playing any decided part in their school stud-

ies. Manual training requires that more time be devoted to it. It should also be placed on an equal footing with other school subjects. If this cannot be done, we must not expect the greatest results from its limited adoption. The cost ought not to be regarded as expenditure, but as an investment which is calculated to give large returns both educationally and industrially.

One of the most serious defects in our manual training as at present conducted is that the boy does not get any adequate idea of the value of time and material. These factors in the majority of cases never enter into the calculations of the manual training room. A prominent manufacturer said recently: "My harshest criticism of our present manual training work in our public schools is that the boys and girls do not have a proper appreciation of the value of time and the cost of material. I will take a boy into my shops and will make him do twice as much as you can make him do in the same length of time."

While there is a large amount of truth in this, there is still something to be said on the other side. The conditions are essentially different. In the shop the boy does not feel sure of his place. Unless the quality of his work be high enough and the output sufficient, he is well aware that he risks dismissal, and that another is ready and willing to step into his place. In the shop the operations, owing to frequency of performance, tend to become automatic and lead to speed. In the school as soon as a boy can do one thing well he is given a new problem. But after everything is said that can be said, we all know that there is more or less waste both in time and material, and our efforts should be directed towards eliminating it.

In Pueblo, California, a cost-check was handed to each boy on the commencement of his work. The various grades had different values assigned to their work, ranging from seven to fifteen cents per hour. The boys were found eager to discover all the facts relating to any piece of work in

hand, and when the cost of an article that could be bought for one dollar was found to run up to three or four dollars, the boy did not need to be told that there was something wrong. Of course, objection will be taken to this plan on the ground that too much is made of dollars and cents, and that it is calculated to ruin the high ideals that should be the sole basis of the work. But the sooner some of the so-called ideals of manual training are allowed to go by the board and the work is brought into actual relation to practical life, the better it will be for all concerned. The standard of cost is the one that will appeal to the boy most of all. He hears about it every day and knows thoroughly well what it means. There is no danger of the work suffering from the adop-

<u>Cost Check</u>	
Job	Gun Cabinet
Material	
Wood, Kind	Oak
No. feet in job	38
No. feet spoiled	1
Price per foot	10 cost of wood
	3.90
Brass for hinges.....	40
Lock	50
Felt for lining.....	2.10
Stain Varnish—glass	1.15
Time	
Date begun	9-9-07.
Date finished	20-12-07.
Extra hours	1
Total hours	77
Wage per hour	15
	Cost of time.....
	11.55
F	Total.....
	19.60
Check	H. M. H.
Name	Ray Merz,
School	Central
	Grade 9.

tion of some such plan. By this means there will be removed a glaring economic defect that is causing much adverse criticism from practical men. A copy of the check referred to is found on the preceding page.

There is need also in the manual training room of more coöperative or community work. As an illustration of what is meant, take the method as worked out in a Toronto "centre." Fifteen classes, from various public schools in the neighborhood, attend this particular centre each week. Ten of these classes receive a weekly lesson of one and a half hours and five one of two hours. Ten classes were chosen, and each class was to make a "Morris" chair. The idea was coöperation. The teacher felt that the training the boys were receiving along the lines of getting along with their fellows and working harmoniously with them, upon which the success of the modern workman so largely depends, was not sufficiently stressed. He also felt that the individual work was tending largely to encourage selfishness. Each class chose its own foreman, and the chair, when made, was to be presented to the principal of the school from which the class came. Plans were discussed, the drawings made, and the wood chosen and purchased by the boys. The various parts were allotted to different boys. When these were completed, they were assembled and built into the finished chair.

Another example of the same method follows. An evening school in the Province of Ontario was being equipped, and fifty drawing-tables were required for the draughting-room. The type of table was determined, the drawings and blue-prints made, and the whole of the work done by shop methods in the evening woodworking class. While this was being done, temporary tables and trestles were used in the draughting-room. Methods of this character are capable of almost unlimited development, and would do much to give an accurate knowledge of the industries and the conditions under which they are carried on.

Modified shop methods must be introduced into the schools. Visits to factories and various industries might be made. As far as possible the industries should be reproduced in the classroom and every opportunity taken advantage of to relate the work closely to the industries of the locality.

As the failure of manual training from the industrial point of view has largely given rise to the present agitation for industrial education, so that agitation has reacted on the practice of manual training. Teachers are gradually changing their attitude and seeking to obtain that actual shop experience which is proving to be so necessary. Industrial methods are being adopted, correct technique being insisted upon, and a silent revolution is in course of operation. The manual training of to-day is very different from that of even five years ago, and in another five years it will probably be scarcely recognizable for the same subject.

The subject corresponding to manual training that has been brought into the curriculum for girls is household science. Housekeeping to-day is recognized as an industry in which large numbers of women are engaged. For this reason the whole, and not a fractional part of it, should be taught in our schools. Owing to various limitations, elementary school household science consists almost entirely of cookery, but we do not live in the kitchen. The bedroom, the bathroom, the dining-room, and the living-room should also receive due attention; and therefore the kitchen should not be regarded as the unit of equipment.

It still remains for some progressive Board of Education to show what can be done in the teaching of girls by making provision for the larger subject of "housewifery," as it is called in the English schools, by furnishing a model house or flat, in which every department of household work can be demonstrated and taught.

Let us take a typical case of this plan for teaching

housewifery. The Manchester (England) Education Committee owned two cottages near one of the schools. These two houses have been simply furnished and equipped in a style suitable for a working-man's home. The teacher lives in one of the houses, and classes consisting of twelve girls are taught at one time.

All the practical details of household management are dealt with, such as the buying and cooking of food, bread-making, washing, mangling and ironing, cleaning, scrubbing, dusting. By means of this provision, about one hundred and twenty girls will have the benefit of practical training, and in time there are to be given simple lessons in hygiene and the tending and feeding of young children. To meet the requirements of the English Education Department, it is necessary that each girl should have previously gone through a course of lessons in cookery and laundry work.

If the last six months of a girl's life at school could be spent at such a centre, in training for the duties of keeping the home, there can be no question but that a vast improvement would be effected in the comfort and economy of home life, and such provision might reasonably be expected to develop a decided tendency to prolong the school life of the girl. The need of training for housekeeping and home-making is evident on all hands. If men started out with as little knowledge of their business affairs as does the average girl of housekeeping, business failures would be chronicled every day by the score instead of the occasional few as now. In the two excellent schools for the training of household science teachers in the Province of Ontario—Macdonald Institute, Guelph, and the Lillian Massey School at the University of Toronto—a complete apartment or flat is included as part of the equipment, and the prospective teacher gets the kind of training above referred to.

In the actual teaching of cookery itself, more practical

methods might be adopted. A laundress was asked by her mistress, "Does your daughter learn much in cooking-school?" "Sure, then, that public school cooking is nothing but child's play at all, miss; me girl she makes a little loaf o' bread no bigger than me fist, an' a teaspoonful o' plum puddin', an' she bakes a quar-r-ter o' a potato. It makes me laugh, that does." Of course, this criticism is very much overdrawn, but it contains an element of truth which we shall be wise not to ignore.

The most frequent criticism I hear is this: "Your household science is all right as far as it goes, but it does not go far enough. My girl can cook a bit of this or that, but when my wife is sick and my daughter has to attend to the house and get a complete meal, she gets all tangled up." Assuming that the main business of a cooking-school is to teach how to cook, which assumption, by the way, all are not willing to admit, it seems that much more attention to the preparation of the complete meal is required, or the time, money, and energy spent on the subject will be largely wasted, as far as practical housekeeping results are concerned. Of course, the answer to all that has been said will be that the time allowed is not nearly sufficient to permit of this being done, and the answer is to a very great extent justifiable. In some cases the teacher has fifteen different classes a week and the same lesson is repeated the same number of times, and as a rule vitality is lost each time it is given after the third or fourth.

We must admit that both manual training and household science are handicapped and the time limited, but then we have to ask ourselves whether the most efficient use is being made of the time that is grudgingly given to us. To this question, after a careful review of the methods now in vogue, one cannot always answer in the affirmative.

The measures that seem to be needed here are: —

1. The frank admission by all manual training advocates that the subject has a decided and distinct industrial value,

which is at least as great as the cultural value, in the training of the boy or the girl.

2. A reawakening of public sentiment and a revival of popular interest in the subject on the above grounds.

3. The employment of teachers who, in addition to the widest professional and academic training possible, have above all an accurate working knowledge of shop conditions, requirements, and methods.

4. The employment of these shop methods in the manual training room whenever that is possible without sacrificing the educational interests of the pupils.

5. The adoption of various measures calculated to bring about a closer correlation between the industrial work of the home and that of the school.

6. The devotion of much more time and attention to manual training, household science, and drawing of an intensely practical kind, with a direct local and industrial application.

V

SOME NEW TYPES OF SCHOOLS, AND PRINCIPLES UNDERLYING THEIR ORGANIZATION AND MAN- AGEMENT

ANY reform of, or additions to, our educational systems must take that which already exists, as the basis on which to build. It would be the height of economic folly and a foredoomed failure to attempt to establish new types of schools and ignore the experience and achievements of the past.

In previous chapters the necessity for a revitalization of the public school curriculum and a change of viewpoint — the industrial rather than the academic — has been pointed out. Assuming that these changes, which really mean a modernizing of the system, will be gradually carried out, it is in order to inquire what new types of schools, if any, are required, in addition to those we already have, what principles should underlie their establishment, and what results we have a right to expect from them.

The main purpose of all education should be to make a good citizen. This statement, of course, is a mere commonplace, and has been repeated so often that it has almost lost its meaning. One essential feature of good citizenship has been entirely lost sight of and willfully ignored by educational advocates. Before a man can become a good citizen he must have and use the ability to earn a living. Henry George has said, "Poverty is the Slough of Despond which Bunyan saw in his dream and into which good books may be tossed forever without result. To make people industrious, prudent, skillful, and intelligent, they must be relieved from want." Education, we are told, is to teach us how to live, not how to make a living; but it is a sheer

impossibility for a man to learn how to live unless he can make a living for himself and those dependent on him. As long as we dwell on the ideal, ignore the actual, and willfully blind our eyes to the necessity of training for self-support, which in our modern civilization is facing the vast majority of our people, we are shirking the issue and not meeting the situation. This self-support is the first obligation of a citizen, and the absolutely necessary basis of a wider and more unselfish range of service.

It has already been pointed out that at least eighty per cent of the boys and girls never proceed further in the educational organization than the elementary school, and that between their leaving school and the time when they reach sixteen years of age, when they are generally admitted into productive industry, much educational loss is incurred.

It is evident that the existing high schools which have been in operation for many years, do not meet the needs or requirements of this eighty per cent, and it becomes our duty to provide a type of education which will give just that instruction which is demanded by the economic conditions and probable future occupations of the large majority of our pupils.

It is the prevailing fashion in most countries having a democratic form of government to decry any process of grading or sorting children, as it is believed that this would tend towards making and accentuating class distinctions. It is high time we ceased worshipping the fetish of equality. Our educational systems, democratic though they are said to be, are making these distinctions where they do not already exist and emphasizing them where they do. We have at least two castes, those who are of the elect and those who are not, i.e., those who can absorb the printed page and pass the prescribed examinations, and those who, for both mental and financial reasons, are not able to do so. Germany has classified her children and so has Switzerland. The former is an aristocracy and the latter a true demo-

cracy. Until we in America can learn their lessons, the waste of giving the wrong kind of education — an education not fitted to the circumstances of the child receiving it — will continue.

In view of what has gone before, a new type of school is urgently needed. This would supplement and not replace any existing organization. If, as suggested by the State Commissioner of Education for New York, the present curriculum can be accomplished in one year less than at present, the school proposed could be entered at thirteen years of age, and it would thus provide a three-year course, which would carry the boy and girl up to the time they are generally admitted to the industrial ranks.

The new school might be called a "general industrial school" for the first two years and a "special industrial school" for the third year. The work undertaken would be definitely related to the industries of the district, and for this reason it is difficult for any central body to outline with absolute definiteness the curriculum of such a school. The problem of industrial education is almost a separate one for every trade and for every locality. It is only the localizing of this work that will make it effective. In addition to the practical shop work taken in such a school, the subjects might be English, mathematics, science, drawing, industrial geography, and history. Every subject should be treated strictly from its industrial side, and for this reason the curriculum ought not to be drawn up entirely by the educational authorities. In this connection the assistance of industrial experts could very well be called in.

An excellent example of a school closely approximating this type is the Rochester "Shop School." Its very name outrages the traditional idea of a school. The school "has for its aim the training of boys along general industrial lines and in the fundamental principles pertaining to certain trades, but does not aim to teach a trade. It does aim to develop rapidity and efficiency in execution, so that

those who go out with a diploma will be better fitted to enter their chosen trade than they would be under prevailing conditions."

There are six courses now offered,—cabinet-making, carpentry, electricity, plumbing, architectural drawing, and machine design. Each course lasts for two years, and the school is open forty weeks in the year. Each course is divided as follows in hours per week:—

Shop work	15	hours
Shop mathematics	5	hours
Drawing	5	hours
English	2½	hours
Industrial history	1½	hours
Spelling	1	hour

Five hours' home work in mathematics and spelling are exacted each week, and the boys in the electrical course are obliged to spend three hours a week, in addition to the above time-table, on the theory of the subject. The daily sessions are from 8.30 to 3 P.M. The school is closed thus early in the afternoon in order that the boys may find outside work if necessary.

Some schools that approach this type have largely followed the manual training plan of shop work, both in the method of treatment and in the subjects taught. Both these must be changed if these schools are to have a definite and precise industrial connection. The industrial method of treatment is required; subdivision of labor, length of time on the job, cost of material, wages awarded, disposal of the product, and a number of other trade practices must be brought into play. There is no reason why woodwork and metal-work should be the only forms of workshop practice offered, or why they should be offered at all unless specially demanded by the industries of the district.

Consideration might well be given to the length of the school day. There is no valid reason why boys of fourteen years of age should not be required to work eight hours a

day, as in the shop. With the variety of work offered, this would entail no undue physical or mental strain. The usual two or three months' holiday is in need of considerable curtailment in schools of this character. The authorities of the Williamson Free School of Mechanical Trades say, "Although our school day is eight hours long, there is generally excellent attention in both mechanical and academic departments, the happy combination of the two, leaving our young men fresh and bright at its close."

A great hindrance to the progress of schools of this character will be the tendency of boys to leave before they have completed the course on which they have entered. It would be a decided advantage to have steps taken, by legal measures if necessary, to discourage any employer taking into his shop a boy who thus leaves except under the most pressing circumstances, and labor unions might well refuse to admit to membership any boy who leaves, without adequate and justifiable cause, a school approved by them.

In speaking of such a school, the Report of the American Federation of Labor, meeting in Toronto, November, 1909, says: —

We favor the establishment of schools in connection with the public school system at which pupils between the ages of fourteen and sixteen may be taught the principles of the trades, not necessarily in separate buildings, but in separate schools adapted to this particular education, and by competent and trained teachers.

The course of instruction in such a school should be English, mathematics, physics, chemistry, elementary mechanics, and drawing, with shop instruction for particular trades; and for each trade represented, the drawing, mathematics, physical and biological science applicable to the trade, the history of that trade, and a sound system of economics, including and emphasizing the philosophy of collective bargaining. This will serve to prepare the pupils for more advanced subjects and in addition to disclose their capacity for a specific vocation.

In order to keep such schools in close touch with the trades, there should be local advisory boards, including representatives of the industries, employers, and organized labor.

We recommend that any technical education of the workers in trade and industry, being of public necessity, should be not a private but a public function, conducted by the public and at the public expense.

After two years of such a general course organized with special reference to local requirements and with the coöperation of both educationists and industrialists, the boy, his parents, and his instructors would have some definite and reliable information and experience on which to base a decision regarding the occupation for which the boy is to be definitely trained. The last twelve months of the boy's course should be spent in the trade he has chosen, and this would render him of immediate value to an employer and would enable him to earn a living wage from the time of his entry into the shop.

This is largely the plan followed in the Newton Independent Industrial School. On completion of the three years' course the boy is given a certificate indicating the trade in which he has specialized. The final certificate of the school is not given until after a year's work in an approved shop. During this year the student workman sends a weekly written report to the school describing the progress of his shop work, wages received, and any other particulars he thinks should be noted. If the year's work is satisfactory to the employer, the full diploma of the school is granted. This is practically an entirely new feature in such schools, and promises to be one extremely valuable to the three parties concerned.

The first three months in such a school might well be considered a probationary period, for not all boys are adapted for industrial pursuits, and it is essential for their future welfare that this be discovered and acted upon early in their career.

There is a grave danger that schools of this character will be regarded by schoolmen as a refuge for all boys who have failed to achieve distinction in the ordinary academic work.

This tendency will have to be strenuously resisted. These schools are not the last resort of the mentally weak, nor are they to be used to separate the sheep from the goats. They must not be regarded as cities of refuge. The lame, the halt, the blind, and the mental and moral defective must be eliminated as carefully here, as in the ordinary school, and provided for specially and separately. Brains are just as necessary for the industrial worker as for the minister, lawyer, or doctor.

After such schools are established, the question of securing the attendance of those for whom they are designed will require consideration. We may as well admit the fact that until compulsion is resorted to, and rigorously enforced, attendance at these schools will be small and spasmodic, and that much accommodation will remain unused and equipment lie idle. There is in existence a school on which considerably more than \$100,000 has been spent in building and equipment. This school is attended by barely forty boys in the daytime, and were it not for the large and enthusiastic evening classes such an expenditure could not be justified.

In another case a day industrial school was established offering an excellent course for both boys and girls. Letters were sent to the parents of every boy and girl leaving the elementary schools, the leaving classes were addressed and the benefits of the proposed school pointed out to them, an energetic advertising campaign was conducted lasting for two months, the enthusiastic support of the local press secured, and when the school was opened three boys and two girls presented themselves. The situation was taken in hand by two energetic and enthusiastic members of the advisory committee, and they, by personal visits to the homes of the most likely cases, were able to get together two classes of twenty each, which are now doing most excellent work along industrial lines.

Compulsion is distasteful, but it will eventually come;

meanwhile the community must be content to accept gross and wanton waste both of its human and material resources.

In the absence of compulsion this waste might be somewhat lessened by a system of scholarships. A well-organized scheme of scholarships and maintenance allowances is becoming a prominent feature of the English and Scotch systems of industrial education, and though it is said the necessity for such on this continent is not so urgent, yet it cannot be altogether ignored if all are to have equal opportunity. Old age pension schemes are today within the range of practical politics, and some of the older countries have already adopted such schemes. From an economic point of view it would pay any nation so to arrange matters that these would not be generally necessary. Old age pensions are required largely because the conditions of industry and the incapacity of the worker have been such as to prevent him making the needed provision for the time when he is no longer wanted in the industries. Of course, extravagance, thriftlessness, drunkenness, and other factors also come into play; but when all due allowance is made, the fact remains that the economic conditions of industry and the high cost of living are largely to blame. The newer nations should, while there is yet time, start at the other end of the scale, and if a system of allowances is necessary, in order that every child may be industrially trained and thus removed from the ranks of casual laborers, the expenditure should not be shirked.

The scheme of the London (England) County Council is elaborate and comprehensive. The schools are of two classes; the first, offering opportunities under which a boy or girl may proceed from the elementary school to the university, and the second, providing trade training for both boys and girls. Children whose parents earn less than \$800 a year are also eligible for maintenance allowances. The

amounts vary, but for boys are generally \$30 for the first year, \$50 for the second year, and \$75 for the third year. The allowances for girls are usually \$40 for the first year, and \$60 for the second year. A probationary period of three months has to be passed without any maintenance allowance at all, in order to prevent the funds being wasted on unsuitable candidates. The parents are also required to sign a declaration that they intend their children to enter the trade on completion of their training. The cost of the whole scheme in 1908 was \$750,000, and it is estimated that when it is fully at work it will represent an annual expenditure of \$1,250 000. By these schemes of scholarships bright boys and girls can rise from the lowest point to the highest in the educational organization, according to ability, capacity, and desire, irrespective of financial condition. The accompanying diagram on page 85 shows the scheme as applied in Manchester.

As these schools grow in number and importance another problem that will have to be solved is the disposal of the product. If the schools are to be effective, shop conditions must prevail. The instruction cannot be definitely industrial unless it is designed to meet industrial conditions, and the only effective test of the material product turned out is the place it can take in fair competition in the open market. The more the work of the boy is subjected to the rigid laws of trade, and the more he can be made to feel exactly the same responsibility that rests upon an actual workman in the shops, the better will be his training and the higher his place in the industrial world when he enters it. There is no doubt that the boy must become intimate with the marketable product.

There is all the difference in the world between a school where boys and girls are making things for themselves, and a workshop where they are being made for others and for the general market. In the schools as at present organized the boy is able to please himself, to choose largely

what he shall make, how he shall make it, how much time he shall spend doing it, and what quantity of material he shall use. In the shop the work must be done on time, the orders of others must be obeyed, articles made and work done regardless of personal whims and fancies, and the greatest economy exercised in the use of material. There is no picking and choosing, hence the atmosphere is entirely different. It is this shop atmosphere that the boy must be impregnated with.

There are several ways in which the product may be disposed of. If the plan of establishing the school with the minimum of equipment is followed, it will be several years before that equipment is complete and the product in this case will be absorbed by the school itself. After completion a machine or tool should be properly valued, by comparison with standard makes, and the value credited to the school. Much of the product can also be used in the other schools of the city. If the work is up to market standard — and none should be accepted unless it is — some of it should certainly be sold at full market price. The product of the schools for many years will be very small in amount, and if care be taken not to disturb the ordinary market conditions, no harm will result from the test thus applied to the work of the school.

The Williamson School of Trades and many other such schools are opposed to the sale of the product, but in the Williamson School the building trades find sufficient work in the buildings of the institution itself, and in this way ordinary trade conditions are met with in the work that is done.

Let us take one or two examples of the way in which this important question has been solved.

In the Rochester Shop School every article manufactured is something needed in the public schools, and which the Board of Education would otherwise purchase. It must also have an educational value. All the product is

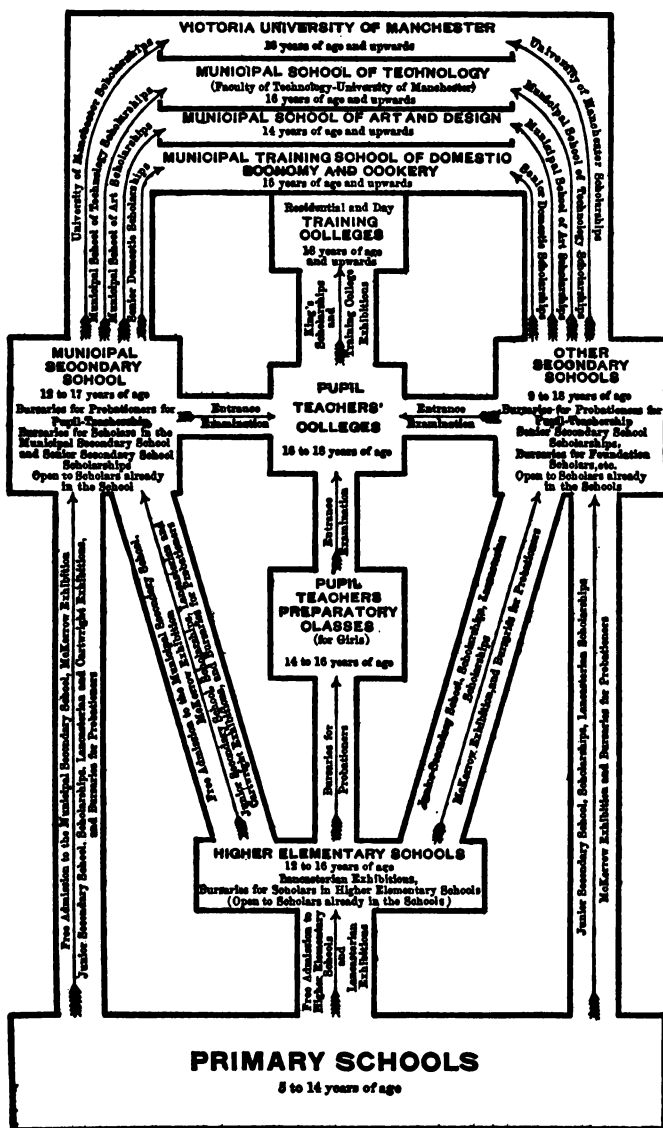


DIAGRAM ILLUSTRATING THE SYSTEM OF SCHOLARSHIPS AND BURSARIES

"run through" in lots of six with time and stock cards. The electrical department has charge of the repair of the bells, telephones, gongs, batteries, and lighting systems of the public schools of the city. It also installs any new work required. The plumbing department also has charge of the repair work in the public schools, such as broken closet-tanks, broken water-pipes, connecting gas-plates, repairing drinking-fountains, installing bowls, removing stoppages in waste-pipes, etc.

The Newton Independent Industrial School is also one of those adopting the policy of doing trade work and turning out a real product. This school was commenced with a minimum equipment, and its work up to the present has very largely consisted of making supplementary equipment for the different shops and for the other public schools. The printing class of the school has been credited with more than three hundred dollars by the school department. A monthly paper, "Industry," is printed and published by the boys. The following is an extract from that paper, written by one of the pupils: —

The greater part of the equipment in the sheet-metal department has been made by the pupils, who have thus gained valuable experience and also saved the school considerable expense. The equipment was made in two departments of the school, the woodworking department and the machine department. In the woodworking department there were made five benches, one stock table, twelve riveting-hammer handles, twelve mallets, twelve tool racks, six boxes for miscellaneous work, patterns for one anvil, and six different stakes. The following were made in the machine department: twelve riveting-hammers, twelve tin-smith hammers, and twenty-four punches. The gas-piping was also done by the machinists. The equipment purchased by the school consists of six gas forges, twelve soldering-irons, and two machines for sheet-metal forging.

It goes without saying that all interests concerned, education and industry, capital and labor, must coöperate if effective schools are to be established; and the better under-

standing that would be thus brought about between sometimes opposite parties would result in a great economic saving both to capital and labor, in reducing to some extent the waste of millions in senseless strikes and pitiless lockouts.

As showing the different organizations coöperating in the establishment of industrial schools in Germany, take the following. At an industrial school exhibition held in Dresden, 251 schools participated. Of these 48 were supported by the State, 47 by different trades and guilds, 88 by other industrial organizations, 45 by towns, and 23 by private individuals.

The coöperative plan, as carried on with various modifications in Cincinnati, Fitchburg, Beverly, and other places, has much to recommend it. The first striking advantage seems to be the economy of its management. Twice the number of students can be taught at about two thirds the cost, owing to the fact that the schools do not require any special shop equipment. There is further economy, in that the student is earning while he is learning, and in this way a much greater constituency is likely to be reached. The pupils are divided into two groups, one being in the factory and the other in the school—spending alternate weeks in each.

The Cincinnati school is of technical rather than industrial rank, and provides for about 230 students, who are at school or in the shop nine hours a day, six days a week for 48 weeks in the year. The plan, modified to suit local needs and circumstances, has great possibilities, if, and only if, the objections of organized labor can be overcome. These objections at present are:—

1. The boys are in the course on sufferance, as the veto power is in the hands of the manufacturer.
2. That the scheme is one in which the people have no hand or control.
3. That principles opposed to trades-unionism may be taught.

4. That any boy who shows a desire to advocate unionism may be instantly dismissed.
5. That the teacher is under the control of the manufacturer.

The American Federation of Labor, in reporting on this plan, says: —

Any scheme of education which depends for its carrying out on a private group, subject to no public control, leaves unsolved the fundamental democratic problem of giving the boys of the country an equal opportunity and the citizens the power to criticise and reform their educational machinery.

Labor is said to be opposed to trade schools, and quite rightly so, as the term has been interpreted; but in the same way that apprenticeship has become modernized in accordance with the spirit of the age, so a trade school, carried on under public management and control, bears little relationship to that which has hitherto been understood by the term. The ordinary conception of a trade school has been a school in which there has been given a narrow type of instruction, concerned only with manual dexterity and skill, no attention being paid to the underlying scientific principles on which the practice is based. These objections no longer hold, as a school of the type suggested will do all or attempt to do all that labor requires in turning out a broad, all-round man.

These schools will be expensive; the cost of material and equipment, the high salaries that will have to be paid to competent teachers, the small numbers that can efficiently be taught at one time, all contribute to this end; but surely expenditure in this direction may legitimately be regarded as a justifiable form of social investment. If ignorance is dangerous to the State, idleness is equally so; and the State which acknowledges its obligation to teach children to read and keep books, cannot logically deny its obligation to teach them to work. In dealing with expenditures on industrial education, the aggregate amounts should not be dwelt

upon, but comparisons made with expenditures in other directions.

Take the following from a current newspaper: —

WASHINGTON, D.C., May 22, 1912. America's demand for the luxuries of life has not diminished with the ever-mounting cost of necessities. Articles listed as "luxuries" imported into this country during the fiscal year ending next month will exceed in value \$200,000,000. Luxuries, or "articles of voluntary use," include diamonds, works of art, laces, embroideries, wine, tobacco, ostrich feathers, toys, perfumeries, cosmetics, and jewelry. Works of art, according to a statement issued to-day, will approximate \$40,000,000 in value for the full year, compared with \$22,500,000 in 1911. Diamonds and other precious stones will be about \$41,000,000 for the year, thus exceeding any earlier years except 1910 and 1907. Laces and embroideries will amount to about \$44,000,000 for the year. This is an increase of fully fifty per cent in a decade. Other "luxuries" which help to bring up the grand total are tobacco and its manufactures, imports of which for the year will reach \$32,000,000 in value, and toys of which \$9,000,000 will be imported.

The above shows that there is a vast amount of money going to waste, some of which could be diverted with advantage to the promotion of industrial education.

An attempt has been made to discover the annual amount spent and invested in baseball, but the President of the National Baseball Commission will not "even hazard a guess." If this amount could be discovered, it would probably be found largely to exceed that spent on industrial and technical education.

If retrenchment is the order of the day, the schools are the first to suffer, while really there are hundreds of other directions in which we could better afford to economize, but economy except in education is the best hated of all the virtues. We are too ready to accept the fiction of the politician, that our schools are costing too much, when the fact is, that we are too poor to spend so little. Much more than we now spend would be money in our pockets if we only knew the right way to spend it. In calculating the

expenditure in any other business, we also estimate the returns that may reasonably be expected, and so it should be here.

The Federal Governments might fairly be called on to bear part of the expense. It is a popular fallacy in Canada and the United States that education is a matter of Provincial and State concern, and that the Federal Governments cannot legally enter into the field. A politician is always able to find an excuse for inaction and to take refuge behind the Constitution. On the other hand, if the Constitution stands in his way it does not take him long to drive a coach and four through it.

The United States Government, in its Bureau of Education, in the aid it gives to agricultural and engineering education, has recognized the principle that industrial and technical education is a matter of national concern.

Likewise the Canadian Government has established experimental farms, a military college for instruction in engineering, given a grant towards a railway school at McGill University, provided instruction in navigation and seamanship, made grants to art schools and various industrial exhibitions, and in other ways tacitly made the same admission as the United States Government. Under these circumstances the constitutions would not suffer irretrievable damage should aid be further extended, to assist the great mass of industrial workers.

No single community should be asked to bear the whole burden. If the individual could be retained in the place where he received his training, that community might expect to find its wealth proportionately increased; but labor moves, and especially trained labor, and after training a man the community is liable to lose the advantages arising from that training. Under these circumstances no man can be trained for permanent service in the particular locality where he happens to live at the time he

receives his training. He is being trained for service in the country at large, and it is not unreasonable to expect the country to pay, at least partially, for what it gets.

The trouble is that while people believe, or are thought to believe, thoroughly in practical education, they are not as willing to expend large sums on it as they are upon the long-established school or college which has a firm hold upon the popular imagination, and moreover is not in an experimental stage. The people will have industrial schools when they are willing to pay for them. Whether the money be supplied from public or private sources, it is essential from an economic standpoint that there be no waste.

Underlying all the questions of the establishment, organization, and management of such schools, is this necessity for money. This really fixes their extent and efficiency. Not only so, but the attendance at them will largely depend upon the same factor. The parent and the boy have to be convinced that the training given is "worth while," and that it will not only strengthen the boy's powers and intellect, but will also result in increased earning capacity. These schools are not designed to draw very largely from the existing types of high schools, which generally meet the needs of those attending them. They should attract a large part of that floating population of children between thirteen or fourteen to sixteen years of age, who are at present engaged in various occupations that have no educational value in the present and give no efficiency for increased earning power in the future.

In summing up the whole situation it seems to be beyond controversy that some form of productive industry will be the life work of the large majority of children leaving the public elementary schools, and also that these children are not attracted by, or are not able to avail themselves of, the provision hitherto made for further education.

If these propositions are admitted and recognized as

defects, it then becomes our duty to provide a satisfactory remedy.

The school suggested to accomplish this purpose is one which will —

(1) Continue and extend the essentials of the training previously given.

(2) Give to the boy or girl from thirteen to sixteen years of age a training definitely designed to qualify for intelligent industry.

(3) Lay a foundation for further study either technical or academic.

(4) Make such provision that financial considerations do not prevent the attendance of any who wish to receive the training offered.

VI

VARIOUS PROBLEMS RELATING TO SUPPLEMENTARY EDUCATION IN DAY AND EVENING CONTINUATION SCHOOLS

THERE are a number of important problems concerned with various forms of supplementary education. Some of these will now be discussed. After the pupil has completed his attendance at the primary school, or in a few cases attended a school of the type mentioned in the previous chapter, his only hope for further education is in evening schools, or some other supplementary form which can be taken after his daily work is completed, or when he is out of work through slackness of trade or other causes.

Evening schools of various kinds have long been established. Their first purpose was to supplement general education, and like the day schools they had no connection with practical industry. To-day they are looked upon as an essential part of any organized and complete scheme of industrial education.

There is probably no branch of our educational system in which so much self-deception has been practiced. We have willfully blinded ourselves to many undesirable features and stoutly tried to convince ourselves that all is well. Directly a people gets the idea that its educational system is the "best in the world," it falls peacefully asleep. The sedative potion that is now being administered in connection with evening schools is the blessed word "enrollment." We are always proudly told how many students are "enrolled," but when it comes towards the middle or end of the session the numbers in actual attendance are not so widely blazoned.

We are inclined to pander to the too prevalent opinion

that if an institution can be filled, it is bound to do good work. We are getting into the habit of worshiping size and numbers. Nothing stimulates popular pride more than looking at the growth of cities and the number of people in them. The extension of the area covered by bricks and mortar, with the number of people herded therein, is always proudly cited as the first and incontestable evidence of the growth of a city. Everybody does it, and the fascination of numbers is laying hold of us in matters of education. Increase in numbers, unless accompanied by several other things, is not necessarily an evidence of growth and progress.

The percentage of attendance at evening schools varies, but as a general rule half the enrolled students complete about one half of the possible attendances. The variation is from twenty to sixty per cent, according to local conditions and the character of the instruction. There can be no doubt that where the instruction has been based on the daily vocations of the pupils, and is directly applicable to these vocations, the interest is far greater, the benefits derived are more far-reaching, and the attendance is more constant and regular. It has been said that regular attendance is the best evidence of sound organization. Judged by this test, the majority of our schools are badly organized.

Evening school instruction is at best a poor substitute for adequate instruction in the daytime, but owing to social and economic conditions it does not seem possible to dispense with it. This view is well expressed in a Report of the Department of Commerce and Labor, Washington (No. 33), on "Industrial Education and Industrial Conditions in Germany": —

The evening school problem is a real bane to industrial education, and is not confined to any one country or to any one people, but is common to the world. It is inherent in no particular system, but finds its origin in an unavoidable condition of life. It is unfortunate but apparently irremediable. It has received the close

attention and earnest thought of the most enthusiastic and conscientious promoters of the new education. It has very likely come to stay. Not until we enjoy a universal prosperity can opportunities of education be open equally to all. The disadvantages of evening schools are numerous and are easily patent to any interested observer. Intellectual application on Sundays or in the evening, when the body is exhausted with a day or week of physical employment, leads to over-exertion, and is apt to arouse a feeling of repulsion in the learner toward the study which robs him of well-earned repose. It has also been suggested that Sunday study of industrial subjects interferes with church work, and leads to a neglect of religion and higher moral thinking. Furthermore, evenings and Sundays together offer too few hours for proper systematic instruction.

Notwithstanding the great and admitted defects of evening class instruction, the fact remains that for the large mass of our population it is the only form that can be made available. It is either that or none. The existing defects of evening schools can be very largely remedied, and in view of the serious drop in attendance noted above, it becomes incumbent upon us to seek measures to avoid this intellectual and economic waste.

The question of compulsory attendance at continuation schools is one that requires serious consideration. Democratic countries like Canada and the United States seriously object to compulsion in any form, so much so that their laws are not always enforced, but are frequently evaded or ignored; notwithstanding this objection to compulsion we shall never reap the full benefit of day or evening continuation schools until compulsory measures regarding attendance are adopted. Every locality should have the power given to it by State or Provincial legislation to establish and enforce compulsory attendance for children up to the age of seventeen years. The time devoted to this continued education, up to six or eight hours a week, could very well be taken from the time now devoted to industry.

The Province of Ontario has recently passed such a measure, entitled "An Act respecting the Compulsory School

Attendance of Adolescents. "Adolescent" is defined to mean "a young person of either sex who has passed the high school entrance examination, or completed the fourth form (eighth grade) of the public schools, or an equivalent course, and is under the age of seventeen years, or who is not less than fourteen nor more than seventeen years of age." The chief provisions of this act are as follows: —

1. A Board may pass by-laws requiring the attendance of adolescents in a city, town, or village under the jurisdiction of the Board at day or evening classes to be established by the Board or at some other classes or school in the municipality.
2. Every such by-law shall be passed at a special meeting of the Board called for the purpose of considering the same, after public notice of the meeting and the object thereof has been given once a week for four weeks, in some newspaper published in the city, town, or village, or if there is no such newspaper, in a newspaper published in an adjoining municipality or in the county or district town.

The by-laws may provide —

- (a) For the compulsory attendance of every adolescent who is not otherwise receiving a suitable education.
- (b) For the establishment of day and evening classes for adolescents.
- (c) For fixing the age, not exceeding seventeen years, for such compulsory attendance.
- (d) For providing courses of study and instructors approved by the Minister of Education.
- (e) For special classes for either sex, or for both, and for those engaged in particular trades or occupations designated in the by-law.
- (f) For fixing the seasons and number of hours in each day and in each week for the compulsory attendance required under the by-law.

Every by-law passed under this act comes into operation thirty days after, unless a petition is presented to the Board of Education, signed by at least ten per cent of the electors, praying that the question be submitted to the people. If the by-law fails to receive the consent of the electors, it

may not be submitted again for at least one year thereafter. Penalties are provided for violations of the act either by parent or employer. The number of hours an adolescent is employed, added to the number of hours he is required to attend school, must in no case exceed in any day or week the number of hours such adolescent may be lawfully employed. The State might well offer double grants or other consideration to any locality taking advantage of this permissive legislation.

The length of the average working day is a powerful factor in determining the attendance at evening schools. Leaving out of consideration the question of compulsion, the establishment of a universal eight-hour day for all industrial workers must be considered as a preliminary to the education of those working at the trades. The adoption of this would very much lessen the force of the argument that the worker is not in a fit state to profit by instruction when given in addition to his daily work. If an eight-hour day were established and some such measures as indicated below were adopted, many of the arguments urged against evening schools would disappear. These measures should concern the student, classification, teacher, curriculum, and general organization.

The merchant who has goods to sell takes every opportunity to bring them to the attention of the people for whose trade he is catering, and the same business methods should be applied here. The boy leaves school at fourteen years of age or earlier. He rejoices in his new-found freedom and thinks no more of school. No boy or girl should be allowed to leave the elementary school without having had the evening school system fully described, and without having seen its classes at work. The gap that now exists between the day and evening school should be no longer allowed to continue. Records should be kept of every boy and girl leaving the day schools and their occupation should be known.

The Education Committee of Rochdale (England) sends a copy of the following circular to every boy and girl leaving the public elementary school: —

**COUNTY BOROUGH OF ROCHDALE EDUCATION
COMMITTEE**

The Members of the above Committee very earnestly invite you and all the other scholars who have recently left the Day Schools to attend an Evening School during the session commencing Monday, September —, 19—.

Your education only begins in the Day School. To be really valuable it must still be continued for several years.

Your future position depends almost entirely upon it, and the use you make of the next few years of your life.

Education courses which begin in the Evening School and end in the Technical School have been arranged, and these courses aim at preparing students for positions in both Workshops and Offices.

One of these courses will suit you, but it is essential that you should begin at once, before the knowledge gained in the Day School is lost. A few years' delay means that you may spend part of your manhood re-doing the work of your childhood.

The accompanying prospectus supplies you with particulars of the Schools, the Teachers, and the Subjects taught, and any further information will be readily supplied either at the Evening Schools or at this office.

The fee must be paid in advance either in one payment or by such weekly installments as you may privately arrange with the Head Teacher.

Scholarships and Prizes are offered for competition, and the students of all Schools are eligible to compete: by this means an efficient student should be able to secure a good education free of cost.

Secretary of the Committee.

EDUCATION OFFICE, BAILLIE STREET,
September, 19—.

The coöperation of employers is essential to the success of any plan for continuation schools, day or evening. Every employer should be required to report to the educational authority the name, address, wages, and hours of

labor of every boy and girl employed. The Adolescent Act, above referred to, contains the following provision: —

Where a by-law passed under this act is in force every person who has in his employment any adolescent to whom the by-law applies shall give notice to the Board of such employment at such times as the by-law may require, and shall state in such notice the hours during which the adolescent is employed by him.

The greatest incentive to the student to engage in any form of industrial or vocational training must always be the monetary rewards and social recognition held out in the trade to which the education is to apply. When the wage-earner learns that increased skill means increased wages, and all that this includes, he will attend suitable classes if offered, and here a duty rests upon the employer. Something more is required from him than mere academic recognition of the evening classes.

The average workman has the idea, and he is not altogether without warrant for it, that the employer advocates industrial education from personal and selfish motives; and until he shows the reality of his advocacy by making attendance at these schools a condition of employment and a factor in promotion, by granting increased wages or certain privileges, by paying all or part of the fees imposed, by a reduction of working hours or of the apprenticeship term, that idea will remain in the mind of the workman.

The advantages accruing from increased earning capacity arising from adequate and efficient training should be shared equally between the employer and the employee. One English firm has adopted the plan of crediting each apprentice or workman, who attends certain specified classes two evenings a week, with one shilling (twenty-five cents) weekly, and paying the same with five per cent interest added as a bonus at the end of apprenticeship or other fixed period.

Another problem that is met with is a certain disin-

clination inherent in the workman to avail himself of the opportunities offered, and this disinclination can be overcome only by showing him that the instruction is calculated to benefit him financially, to raise his social status, and to enable him to perform some useful service to the community in which he lives. The lack of desire may often be attributed to lack of opportunity.

In order that the greatest benefit may be obtained from the instruction given, the majority of students attending evening classes need a little expert guidance in regard to the courses it is best for them to take; and for the purpose of giving this guidance the school should be open at least a week before actual class work commences, with capable persons in attendance, for the purpose of giving the advice necessary to each individual. These persons should have a knowledge not only of what the school has to offer, but also of the requirements and prospects of the industries concerned.

The classification of the students is one of the vital questions upon which the success of evening schools depends. There is a widespread unwillingness amongst organizers of evening classes to exclude any student who wishes to attend, and within certain limits this is perfectly justifiable; but in the interests of all concerned no student should be admitted to any class until he is able to give evidence that he is in a position to profit by the instruction given. If the public school records, as previously advocated, have been carefully kept, his capacity and ability will be known. If the scheme be properly organized, this does not really mean the exclusion of any student, but it does mean his direction to classes in which his knowledge can be used as a starting-point for the new instruction that is to be given. At present students are herded together, those of different ages, capacities, and occupations often being grouped in one class.

This question is a most complex one. Let us take an actual example or two. In a town of ten thousand people,

classes were organized in workshop mathematics and mechanical drawing. Each class was held once a week, and the majority of students attended both. Thirty-nine students were in regular attendance, and their ages varied from fourteen to forty-four years. Their occupations were as follows: seventeen woodworkers, three tinsmiths, two shoemakers, nine machinists, two trunkmakers, two electricians, one laborer, two clerks, one rubber-cutter. The attempt was being made to give instruction, at one time, suitable to each age and to each occupation. The success that was being met with need scarcely be stated.

In another town one hundred and fifty students registered. Their ages ranged from fourteen to fifty. There were sixty-seven between fourteen and twenty; sixty between twenty and thirty; thirteen between thirty and forty; and ten between forty and fifty. As their ages and occupations varied, so did their attainments. In this school forty-three different occupations were represented, and the same plan was being followed with the same degree of success.

The instruction in cases like the above has to be directed towards the average, and the very dull and the very bright must be almost entirely ignored. The instruction required for one trade is not the same as that required for another. The various subjects should be differentiated according to the trade; arithmetic for the carpenter, drawing for the plumber and the tinsmith, chemistry for the textile workers. Drawing, mathematics, and science may be called the "three R's" of industrial education, and before we really know the kind best suited for each trade much investigation of trade practice and requirements must be undertaken.

Another phase of the subject is that relating to the content of courses of study and to the methods employed in their presentation. In regard to the curriculum for evening schools, each locality, in a great measure, will be a law unto itself. We are not so much concerned at

this stage with the actual subjects taught, as with the methods of presentation. In the first place, students should be encouraged to take courses of related subjects rather than single subjects, though, of course, those who wish to take only one subject should not be barred. On the completion of these courses diplomas should be given. These diplomas should indicate a definite standard, and be such that employers will consider them as incontrovertible evidence of the ability of the student. The logical or academic method of treatment in the majority of cases should not be adopted. The instruction must begin with topics of immediate interest and be at once applicable to the shop work of the student. Contrast with this the usual method of teaching mechanical drawing. The student is started on a series of plates generally copied. These consist at first of lines and angles, and geometric figures, which are doubtless of great value when there is a prospect of the pupil spending three or four years at the course. If the same plan be followed in the evening school, the student will be kept on such plates for the first six or seven weeks. He has not the knowledge to enable him to look far enough ahead to see the practical application of these problems to the work in which he is daily engaged, and so becomes discouraged, and ceases his attendance.

If the logical method of presentation is absolutely necessary, it may be adopted after the student has been shown, by a number of problems in which he is interested, that the instruction is calculated to be of direct use to him in his occupation. The method of teaching drawing in evening schools should be more largely from written specifications than from plans and plates which have to be copied either to the same or a different scale.

In one school a large class was formed in workshop mathematics. After the class had been in session for about six weeks, a very serious drop in the attendance was noted, about two thirds of the students having discontinued. An

inquiry was made amongst the students, and the reasons given by them for the discontinuance of their attendance were —

1. That they could not understand the instruction.
2. That the work given was of no use to them in the shop.
3. That the teacher did not know anything of the requirements of the industries in which they were engaged.

The majority of these students were all expert workmen at their trades.

In another case a class in bookkeeping was offered, and when the students met it was found that not one of them knew enough of elementary arithmetic to be able to do any serious work in bookkeeping. This was tactfully pointed out to them and they had intelligence enough to understand the situation. Bookkeeping was changed to arithmetic, excellent work was done, and the attendance kept up till the close of the session. It is not what the school desires to do, but what the particular trade or industry demands. The instruction must be that desired by the students, and, by the resourceful teacher, they can generally be made to desire what they really need.

In the prefatory note to the regulations for evening schools issued by the English Education Department, the conditions generally met with are aptly described: —

So diverse are the conditions under which such schools have to take part in the work of education that no single definite scheme of organization or course of study can be prescribed as applicable to all localities. Circumstances of life in town and country, the number and variety of industries in the locality, previous education and future prospects of students, are some of the considerations that affect materially the possibilities of evening class teaching. In view of this great range of conditions, regulations which have to be of national application must necessarily be elastic. These regulations are drawn so as to permit the direct adaptation of the course of instruction in each school to the needs of the locality. At the same time they prescribe limitations which aim at securing definite educational results as a condition of grants.

Less demand is generally found for actual workshop practice than for those subjects which are related to the daily work of the students, but which cannot be obtained in the shops. I have in mind two cities of about fifteen thousand population each, where the main industries were the various forms of woodworking. In these it was impossible to establish evening classes in practical woodworking, while drawing and workshop arithmetic proved comparatively popular and useful. It is largely in this connection that the evening trade school is capable of demonstrating its usefulness. It is not necessary for the student to work on those machines at which he is engaged during the day. He requires practice on other machines the work on which is more remunerative, and which will enable him to take the next step in the workshop.

There is no more important problem in connection with evening schools than the one which concerns itself with the selection of teachers. We have been told for years by educational psychologists that, "as is the teacher, so is the school," and if this be true anywhere it is certainly true in the case of the evening schools. Probably no single cause has contributed more to their comparative failure and to the paucity and irregularity of attendance than the incapacity of the teacher and his inability to take the viewpoint of the student and of the industry in which he is engaged.

Regarding the question of the kind of teacher required there has always been, and probably always will be, a decided difference of opinion. On the one hand, the present educational authorities contend for the employment of day school teachers who know how to teach, and on the other hand, the industries demand the engagement of teachers who know what to teach, who know shop work, and who are thoroughly familiar with shop requirements. Up to the present time the trained teacher has had the preference. It has been assumed, because a man has been employed as a

teacher of mathematics, science, or drawing in a school that has been successful in passing a large number of candidates into colleges or through examinations, that he is thereby qualified to give the kind of instruction that is needed by those engaged in the industries, but this assumption is certainly not warranted by the results that have been achieved.

The purpose of the two kinds of teaching is entirely different. The day school curriculum in the subjects mentioned, and in others, contains much that can be and must be dispensed with in evening school work, owing to the requirements of the students and the time limitations. If the man who has been trained as a teacher is capable of almost eradicating the habits of a lifetime, of taking an entirely new viewpoint, and of learning the requirements of particular industries, he will make an ideal teacher for evening class work.

Where professional teachers are appointed, they should be required, as a condition of their appointment, to make themselves thoroughly acquainted with the requirements of the industry to which their subject is to apply. This can be done on Saturdays and in the summer vacation previous to the session in which the classes are to be opened. This will, of course, mean their appointment two or three months ahead of the time their services are required. This in its turn will entail a different method of procedure on the part of educational authorities generally. Their usual practice is to think and talk for months, and sometimes for years, and then to rush the whole business through to completion without, after all, adequate consideration and investigation.

The other kind of teacher is the man from the shop, a man who has lived the industry and knows it from start to finish. The main purpose of the evening schools is to give such instruction as can be used in the daily work of the student or is calculated to fit him for a higher position in the

industry. No other kind will suffice. In a country where the industrial development has been rapid and extensive, where new inventions are continually being brought into use, and where people are alive and alert to every turn of the industrial wheel, it should not be impossible to find well-educated foremen and overseers who have the ability to enable them to impart, out of the fullness of their knowledge, exactly the kind of instruction required by the employer and needed by the student. No man is able to teach what he does not know. "No man can teach the shop who does not know the shop." The ordinary teacher has been set to teach shop processes and he has failed. One of our greatest problems is to evolve a new type of teacher. In cases where appointments of this character have been made, the students have recognized at once the superiority and usefulness of the teacher's knowledge, and as a consequence have been regular in their attendance and persistent in their efforts to obtain a measure of that knowledge for themselves.

Some who recognize the importance of the provision of the right kind of teacher for industrial classes are advocating the establishment of normal schools for this purpose. If these schools are established, they should have for their object the training in the art of teaching of those who are already expert workmen and not that of training the teacher in shop methods and practices. The first method may succeed, but the second has within it the germs of failure. The real conditions of industry, its rigid requirements and limitations, the problems of the subdivision of labor, cost, factory organization, disposal of the output, and many other equally intricate problems, can only be learned in the actual shop, and no type of school yet devised has been able to supply this experience.

In Germany and France vacant positions in industrial schools are extensively advertised, an examination is held, and the best mechanics and artisans selected for carrying

on the work. The principals of these schools, particularly in those cases where artisan instructors are employed, should be men of considerable executive ability, intellectual knowledge, and teaching capacity, and should have in addition a wide and varied knowledge of the industries. Such men, while not interfering with the actual shop methods employed, will be able to make use of their peculiar qualities in rendering assistance to the different members of the teaching staff along the lines in which their training has been deficient.

As evidence of the importance attached to this question in Munich, let us consider its thoroughgoing method of selecting teachers. These particulars were supplied by Dr. G. Kirchensteiner to Mr. Paul Kreuzpointer, Chairman of the Committee on Industrial Education of the American Foundrymen's Association: —

There are two sets of teachers of these schools, the academic trained teacher for the academic subjects and the expert mechanic for the mechanical part of the instruction. The academic trained teacher, when detailed to teach in a trade or industrial school, is frequently furloughed for a given number of months to work in a shop of the trade he is detailed to teach. Not, however, for the purpose of learning that trade, but to familiarize himself with the business language and business method of that trade, so that he may be able to apply the knowledge for the benefit of the pupils whom he is to instruct.

For the instruction of the mechanical part of the trade school only expert mechanics are engaged. If in the course of two years or so, these mechanics prove their inability to teach, they are dismissed and others engaged in their stead at whatever expense. However, in trades like carpenters, machinists, and others, where expert mechanics are more numerous, there are always some who desire to become permanent trade school teachers with a state teacher's certificate.

These have to submit to the following rules: —

I. (a) Proof of having attended a trade or technical school for at least three years.

(b) Proof of practical trade education and practice.

(c) Presentation of drawings and specimen of practical workmanship.

(d) Possession of certificate of his dismissal from school, certificate of health and good physical condition, certificate of employment in practical work of the trade.

Provision (a) may be modified, by the candidate attending a trade school during the time of his provisional engagement as a teacher.

II. Condition for examination: —

(a) Production of drawings demanded by the Board of Examiners.

(b) Proof of sufficient knowledge of the materials used and technical knowledge pertaining to the trade.

(c) Production of specimen of workmanship in conformity with the drawings.

(d) Estimates of cost of the work done and material used.

The examination extends over a period of seven hours.

The successful passing of the examination entitles the candidate to a provisional engagement for one year, during which he receives no compensation nor acquires any right to a permanent position. Only if the candidate shows extraordinary ability and qualifications may he make application, after six months, for part compensation.

At the end of the provisional year the candidate has to pass another examination in the practical management of a class, and if successful he is given a temporary position as a teacher. After three years' temporary service he may receive a permanent engagement according to the following conditions: —

(a) Presentation of drawings and specimens of workmanship.

(b) Estimate of the cost of a piece of work according to drawing given by the examiner.

(c) Production of an essay on some subject pertaining to the trade.

(d) Lecture on some subject pertaining to the trade, knowledge of tools, drawing, bookkeeping, and estimating the cost of production.

The school and the facilities it proposes to offer should be extensively advertised. The visitor in England during July and August cannot fail to notice on all the bill-posting stations large posters advertising the classes to be held during the following winter. The fullest use should be made of the local press in giving publicity to the school and its courses. With reference to this, the principal of a recently

established Industrial School in the Province of Ontario has said: —

There is no class in the community more ready to champion the cause of industrial education than newspaper editors. Through them much may be done to prepare the public for the introduction of industrial schools. Newspaper articles giving the experience of other places may arouse local pride and lead to a demand for the establishment of such schools. At the same time, the newspaper editor, being an exceedingly busy man, will appreciate being supplied with data on industrial education, which he has neither time nor opportunity to collect for himself. To supply such data is an important part of the work of those interested in the introduction of vocational schools.

The accompanying illustrations are two examples (very much reduced) of posters referred to above. The first is one which is displayed in all the factories and endorsed by the firm. The second is one issued on the reopening of the school for the winter term.

The question of fees is one of considerable importance. It may be stated as a general principle that free evening schools have not been a success. There is a widespread feeling in the human mind that anything obtained for nothing is not worth having. A fee should be charged. It should be nominal and never high enough to bar out any student wishing to attend. Provision should also be made for remitting this fee, privately, in necessary cases. In some schools the fee is payable in installments if the student so desires. A method that has been adopted in some places, with considerable success, has been to charge a fee and hold it as a guaranty for good behavior and general progress, returning it at the end of the session to all who make a certain fixed percentage of attendance and otherwise satisfy the instructors. This fee is sometimes returned in the form of a bank deposit, instruments, or books.

The length of time the evening schools are in session also requires consideration. Is there any reason except antiquated tradition why these schools should be open for only

ST. THOMAS Industrial School

EVENING CLASSES

1912—COURSES—1913

Woodworking.
Building Construction.
Mathematics.
Mechanical Drawing.
Applied Science.

Dressmaking.
Millinery.
Commercial Work.
Practical English.

ANY person over fourteen years of age is entitled to attend these classes, if not enrolled in a day school.

Here is a chance for you to increase your earning power, cultivate your mind and make yourself a more useful citizen.

There is no entrance examination. Circular and application form may be had at the office of this firm. The principal will be pleased to give information or advice to any one interested. He will be in the City Hall, evenings October 9th, and 11th from 7.30 to 9.30 to enroll intending pupils.

FALL TERMS:

October 28th to December 20th.

SPRING TERMS.

January 6th to April 30th.

We have pleasure in recommending these Classes of the St. Thomas Industrial School to our employees.

Firm Signature.

REGISTER NOW FOR WINTER TERM.

**LONDON
Industrial and Art School
EVENING CLASSES.**

"Education for Efficiency."

COURSES:

Machine Shop Practice.
Forge Shop Practice.
Woodworking.
xPatternmaking.
Building Construction.
xHeating and Sanitary
Engineering.
xWoodcarving.
xSign Writing.

Mechanical Drawing.
Architectural Drawing.
Mathematics.
Practical English.
Dressmaking.
Millinery.
Cooking.
Home Economics.
Art and Design.

Courses marked "x" are New Courses for Winter Term.

ANY resident of the City who is fourteen years of age, and who does not attend day school, is eligible to attend the Evening Classes of the London Industrial and Art School.

The Principal will be pleased to explain the courses to anyone interested. He will be in the school, corner King and Colborne Streets, any Monday, Tuesday, Wednesday or Thursday evening during the school term from 7.30 to 9.30. There is sure to be a rush for places in January.

If you are interested, call at the school or phone 3800.

Application Cards may also be had at the Public Library.

**DAY INDUSTRIAL CLASSES FOR BOYS AND GIRLS
from 14 to 16 years of age.**

Don't leave it till January; register now.

An AFTERNOON ART CLASS will be opened in January.

WINTER TERM OPENS MONDAY, JANUARY 6th.

six months of the year? In cool, well-ventilated, well-lighted buildings there is no reason why they should not continue all the year round. In New York and other cities very successful evening schools for foreigners have been held during the summer. True, these students have a serious motive underlying their attendance; they are getting just what they want; but if the same conditions could be brought about in evening industrial schools it is not unreasonable to suppose that the same results would follow. If these classes were continued, all of course would not attend, but certainly those most in earnest would do so, and the loss of knowledge and interest that is incurred through the total cessation of the work for five or six months would be considerably reduced.

The evening schools should be regarded not only as educational centres but also as social centres. Trace should be kept during the summer of every student who attended the schools during the previous winter. This might be done by means of the organized educational excursion. Even during the winter months more social opportunities should be offered. Social intercourse under proper supervision and direction has in addition a decidedly educational influence and should be made use of wherever possible. Every school might be provided with a good optical lantern or cinematograph and periodical lectures given on industrial subjects to the whole school. Opportunities for the meeting together of all the students at concerts, lectures, etc., could very well be multiplied. At present many schools consist of isolated classes, having no connection one with the other.

In order to secure effective teaching, the classes should be much smaller than is generally the case and the utmost use should be made of individual instruction. No matter what method of classification be adopted, it will never happen that a class can be organized the members of which are of equal attainments and ability. The student must be made to feel that his individuality is recognized and that his

identity is not lost in the mass. Large classes in either day or evening schools are decidedly wasteful.

The schools generally open at seven or seven-thirty. Why should they not be open one or two hours earlier, in order that the students who do not wish or are not able to go home may enter, and read or study, after having been provided with facilities for washing, and getting tea?

The most successful schools have definite plans of making inquiries after absentees. In some, reply post-cards are sent. The following is a sample of such a card: —

INDUSTRIAL SCHOOL

..... 191

Dear Sir (or Madam) —

I find that you were absent from the
While we recognize the fact that absence is sometimes unavoidable, yet regular attendance is so essential to good classwork, and to the progress of the individual student, that we expect our students to make a special effort to attend regularly, and be present on time.

We are anxious that all the students now enrolled should complete the course, but in justice to those on the waiting list and to the work of the school, we cannot hold places for students who are absent from classes except for a sufficient reason.

The term certificates, upon which graduation diplomas will be based, can be granted only to those who attend 80 per cent of the classes in the course. Kindly let me know the reason of your absence.

Yours faithfully,

Principal.

Better, perhaps, even than this is a system of visitation. Absence in many cases is unavoidable. If the absence is prolonged, students hesitate to return, fearing that they will not be able to "catch up." This difficulty may be overcome by the adoption of a series of printed or typewritten notes of lessons and directions for home work, for those who are thus obliged to be absent. Indeed, it is well worth consideration whether each student ought not to be pro-

vided with, or required to make, a summary of each evening's work. These would be exceedingly useful for purposes of review during the summer and before the classes recommence after vacations.

This brings into consideration the question of suitable textbooks. There is a fortune for the enterprising publisher who will give to the schools a series of suitable texts for the study of those engaged in specific trades. These books will have to be written by men who know the shops, assisted perhaps by those who know how to present a subject in the most effective manner. Examples of such books are the "Lowell Textile Arithmetic," previously referred to, and the "Manuals for Apprentices" published by the Brown and Sharp Manufacturing Company and the Grand Trunk Railway System. If books of this character were available, it would lead to much less waste in teaching and the economic results would be immeasurably greater.

The organization of industrial classes will vary according to the extent and character of the industries carried on. The town with one industry presents a problem that is not difficult to solve. The educational authorities and the leaders of the industry can easily be brought together and a workable coöperative scheme readily devised to permeate the whole educational system. The same principle applies here as elsewhere. Nothing definite and worth while can be done without this coöperation, and the sooner the four parties to the contract — the public, the educational authorities, the employers, and the employees — recognize this, the sooner we shall achieve results which will mutually benefit all concerned.

The town in which there is a large number of small but important industries presents a rather complicated problem. First of all, an accurate investigation should be undertaken with the object of discovering the number of persons engaged in, and the prospects offered by, each industry. The industries should then be grouped, and instruction

arranged, first, for the more important groups, then for the less important, and finally, for the individual trades in each group. This investigation must be accurate. No mere general idea will be sufficiently reliable as a basis for action. In a town previously referred to, forty-three trades were represented in the evening school and only two students were electricians. In a day industrial school about to be established in that city, it was proposed to make electricity one of the practical subjects, owing to a general idea that it was one of the chief industries.

Let us take an example of a successful organization in a small town.

Montrose in Scotland has a population of 12,500 people. Here, as in practically every town in the British Isles, it is recognized that provision must be made for the education of those whose elementary training in the primary schools is either unfinished or has lapsed, and hence the first division in the evening school scheme of this town is an elementary class, and students are not admitted into the higher courses unless they have passed through, or are capable of passing through, this elementary section. Pupils who are compelled by law to attend the day schools are not admitted to the evening schools.

The second division is comprised of various courses, — domestic, commercial, industrial, science, and art, — and each course contains several subdivisions. Students are admitted to these if they are over sixteen years of age or if they hold the certificate granted on passing through the elementary section.

The third division is really supplementary and recognizes the social and physical side of the work. Courses, which are open only to those in attendance at one or more of the other classes, are organized in physical drill, gymnastics and swimming, all under competent direction.

The organization required in a large city is in some respects simpler in others more complex than that possible

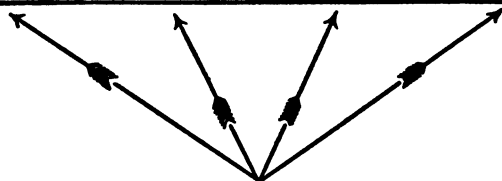
in the smaller towns. There is much more to be done but there is a larger amount of money available for the purpose, and there is generally, with some exceptions, a larger and broader public spirit. Probably the best examples of organized schemes for large cities are those afforded by Leeds (England; population, 1901, 428,968) and Manchester (England; population, 543,969). In both cases there has been a most careful study of the industrial conditions and a definite attempt made to devise plans which are well coördinated with the general system, and which utilize every existing agency to meet the needs of all grades of workers. In the case of Leeds the courses end in the university, and in that of Manchester in the municipal schools of technology, art, and commerce, three separate institutions which are all affiliated with the University of Manchester. In Leeds the industrial courses provide instruction for those engaged in the following trades:—

1. Engineering trades: (a) mechanical; (b) electrical.
2. Electrical industries.
3. Building trades.
4. Leather and boot trades.
5. Clothing trades.
6. Chemical and allied industries.
7. Mining.
8. Textile industries.
9. Printing.
10. Farriery.

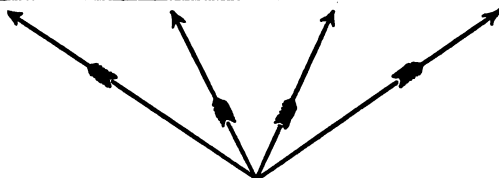
The organization of the Manchester scheme is shown on the opposite page in diagrammatic form.

Notwithstanding the perfection of organization and the facilities offered, the number of pupils taking advantage of the classes is not as satisfactory as the promoters desire. In both cities the day school plants are used for evening classes, and though each has elaborate buildings devoted to technology, Manchester particularly so, yet the enrollment consists almost entirely of evening school students.

GRADE III. CENTRAL INSTITUTIONS			
MUNICIPAL SCHOOL OF TECHNOLOGY	MUNICIPAL SCHOOL OF COMMERCE AND LANGUAGES	MUNICIPAL SCHOOL OF ART	MUNICIPAL SCHOOL OF DOMESTIC ECONOMY AND COOKERY
Specialized instruction in science and technology	Specialized instruction in commercial subjects and in languages	Specialized instruction in art and design	Specialized instruction in domestic subjects [Day classes only]



GRADE II. BRANCH TECHNICAL SCHOOLS, BRANCH COMMERCIAL SCHOOLS, BRANCH ART CLASSES, AND EVENING SCHOOLS OF DOMESTIC ECONOMY			
Second, Third, and Fourth Year Technical Courses, to meet the requirements of all classes of technical students	Second, Third, and Fourth Year Commercial Courses, to meet the requirements of juniors in business houses	First and Second Year Art Courses, leading up to the instruction at the Municipal School of Art	Specialized Instruction in Domestic Subjects, for women and girls over sixteen years of age



GRADE I. EVENING CONTINUATION SCHOOLS		
First and Second Year Technical Courses, for boys engaged in manual occupations	First and Second Year Commercial Courses, for boys and girls engaged in commercial or distributive occupations	First and Second Year Domestic Courses, for girls desirous of receiving a training in domestic subjects
PREPARATORY COURSE For boys and girls who desire to improve their general education or who are not sufficiently prepared to take advantage of the above courses		

In Manchester there are 30,000 pupils of all ages attending the classes, and courses are offered in thirteen groups. In the School of Technology separate and distinct courses are offered in one hundred and three subjects.

Throughout the whole of England and Wales twenty-two per thousand of the population attend evening classes which are under Government inspection. This does not take into consideration a very large number of private institutions which offer instruction in various subjects. This proportion is greater than in any other country in the world where compulsion does not exist.

The effective working of these classes depends largely upon the active coöperation of those connected with the industries. For this reason industrial representatives are being called upon to take a place on the organizing bodies. The Ontario Industrial Education Act, passed in the legislative session of 1910, provides for advisory industrial and commercial committees before classes and schools can be established. These committees have wide powers. On the one hand, school boards are protesting that these powers are too great, and on the other, the committees say that they are hampered by the academic traditions that dominate the older educational authorities. These bodies have been established in a large number of towns, and in every case are doing excellent work, which could not have been done by the older authority, owing to the lack of direct representation of capital and labor. The committees are composed first of six members of the Board of Education, who elect six additional members — three employers and three employees. The Manchester scheme provides for a separate committee for each group of industries.

The experience of Germany and other Continental countries tends to prove that the general educational authority is not the body best fitted to have the sole control of the system of industrial education. On the other hand, that experience shows also that its entire removal from this

authority is not conducive to its most efficient development. This, of course, is largely due to the fact that industrial schools have two sides — the educational and the industrial — which cannot be separated, as they merge one into the other. One requires knowledge and experience of educational methods and practice, and the other intimate acquaintance with the needs and requirements of industry.

The experience of other countries also shows that it is not possible to build up a satisfactory system of industrial education unless the elementary and secondary education is sound and efficient. It is probably for this reason that the Germans in their scientific organization have found it advisable to secure the coöperation of two administrative bodies, one having charge of educational matters and the other of industrial affairs. Such coöperation is universal throughout all the German States. This is intended to secure two things: first, that the instruction shall be of the kind needed by the industry, and second, that the educational methods employed are those best calculated to bring about the ends desired. The weakness of the plan as applied in America will be that the representatives on these committees of the boards of education are by no means educational experts, while the representatives of the industries are chosen for the reason that they are industrial experts. The principal of the school to some extent will be able to correct this. He should always have a seat on the committee, but in a democratic organization could not expect the right to vote.

Let us now consider various other forms of supplementary education which are open to the industrial worker.

There is a decided trend in educational affairs towards that form known as the "correspondence school." Here the way has been largely shown by a commercial organization of world-wide reputation. Contrary, perhaps, to

the usual opinion, it seems to me that correspondence instruction, when it is properly organized and controlled for the benefit of the student, is one of the most useful forms that this supplementary education can take. This proviso cuts out the commercial enterprise maintained solely for the benefit of its stockholders.

Probably the best example of a public organization along these lines is the university extension division of the University of Wisconsin. This is one of the coordinate colleges of the university, and consists of four departments, the fourth of which is known as the "Correspondence Study Department." In it instruction is given in five main divisions: —

1. Special vocational studies.
2. Elementary school branch.
3. High school and preparatory subjects.
4. Special advanced work.
5. Regular university work.

In all, thirty-five departments of the university are represented. They embrace two hundred and six distinct courses of study, and nearly all can be taken by correspondence. The students are laborers, apprentices, farmers, skilled mechanics, clerks, salesmen, stenographers, druggists, bankers, teachers, lawyers, clergymen, and doctors. In addition to the instruction by correspondence, local representatives of the university are appointed, where the number of the students is sufficiently large, and classes are formed to supplement the correspondence instruction. In marked contrast to the commercial type of school, only about five per cent of the students discontinue their work before completing the courses. There are over two thousand students registered for special vocational studies. In addition to the local representatives a traveling professor has been appointed.

The President of the University, in speaking of these courses, says: —

But in order to make this more successful it was necessary to get the coöperation of the merchants and manufacturers. Therefore we came into Milwaukee and presented the case to the manufacturers of this city. Some of them said, "We will give you an opportunity to meet the men in our shops"; a number of them offered quarters for classrooms; and some of them went so far as to say, "We will pay the men for the time they are receiving classroom instruction." In Milwaukee at the present time we have more than one thousand students doing vocational work in twenty different manufactories. Thus the defects of correspondence work have been remedied, and instead of ninety-five per cent dropping out of a course before its completion, less than five per cent do so. Already we are told by the merchants and manufacturers of Milwaukee that the effects of this movement are seen in the increased efficiency of their workmen; that it furnishes them better-trained foremen and in greater numbers.

A number of other universities, notably Chicago, Kansas, Nebraska, and Minnesota, have followed the same plan and afford brilliant examples of higher institutions that recognize to the fullest extent their obligations to the people from whom they largely draw their support. In providing the workman with the instruction he needs, his convenience and his necessities should both be taken into consideration. Unfortunately, even with the most perfect system of day and evening schools, too many will not be able to avail themselves of the facilities offered.

Another excellent example of the correspondence school is that conducted under the auspices of the International Typographical Union. This organization fought and won a severe battle for the eight-hour day, and owing to the desire to influence the new-found leisure of its members, and to counteract the specialization that was preventing any real learning of the trade in its entirety, a committee was appointed to devise a scheme of education that would be acceptable to the fifty thousand members of the union. The scheme had to meet the needs of both the expert printer in the large city and the mere beginner in a backwoods town. The course was not designed, primarily, to

make printers, but to give to all engaged in the trade an education supplementary to that of the printing-office. The course of instruction consists of thirty-seven lessons and costs the student twenty dollars. Under commercial conditions and at prevailing prices this cost would be at least sixty or seventy dollars. It is open to both unionists and non-unionists, the only condition being that students must be compositors, either journeymen or apprentices. During 1909-10 the school had sixteen thousand pupils enrolled. This is a perfectly legitimate and desirable form of trade-union activity. Industrial education is one of labor's rights, and as such should form part of every union propaganda. Seven other unions have taken up work of this character.

There are a number of very small towns which require special methods. Many are without even manual training for the boys or household science for the girls, owing to the expense of equipment and the difficulty of obtaining teachers, to say nothing of the general apathy of the people. The only hope for the ambitious industrial worker in a number of these towns is the correspondence method or the organization of a coöperative scheme by which three or four towns on an electric or steam railway may combine to engage a teacher between them, the teacher to spend a day or night, or two, in each locality according to the requirements of the constituency. In this way the expenses could be shared and a new and beneficial influence projected into the community. There is scarcely a State or Province where a number of groups could not be organized on this basis.

Traveling dairy schools have been established in some Provinces and are doing much useful work. It is a question for debate whether the agricultural college is not doing more for the farmer by taking the college to him than by attempting to bring him to the college. In the county of Hampshire (England) the education authority

maintains a dairy school and traveling forge, which travels for forty weeks during the year and gives a ten-day course in each district. These courses are proving very popular and are meeting the needs of the people.

In Prussia there have been established in factory districts traveling courses for masters and foremen. The cost is large and is partly defrayed by the State. The instruction is given by traveling teachers during the winter months and is sometimes connected with the trade schools of the locality. In 1908, nearly a thousand courses were given in forty-eight different localities, and the movement is rapidly growing.

In this connection it should even be possible to establish traveling workshops. A large car could be fitted up without much difficulty as a carpenter, machine, or blacksmith shop, or as an ordinary classroom, and stationed on a siding for a month or six weeks, and, after giving instruction to all who cared to avail themselves of it, be moved to the next locality.

Why should there not be generally organized schools for workmen who are unemployed during the winter months? In Chicago there is such a school held for four months during the winter for unemployed carpenters, and the practice might well be extended to other trades. In these winter courses opportunities should be given not only for improvement in the trade in which the workman is at present engaged, but facilities should be offered for learning a new trade. Seasonal workers would be in a much better position if they possessed the ability to work at two vocations, one of which is busy while the other is slack.

Industrial trade museums, scattered through various parts of the country, are a distinct feature of the German system, and a feature to which as yet we have paid little attention. These may fairly be regarded as a supplementary form of industrial education. Their influence in the development of trade and industry, in the elevation of taste,

the inspiring of ambition to excel, and in many other ways, can scarcely be overestimated. Take the Gewerbe Museum in Nuremberg, for example. According to the prospectus, the work of that institution is carried on under eight different divisions: —

1. The collection of patterns or samples, which consists of more than 10,000 specimens of ancient and modern examples of works in wood, metal, clay, glass, leather, and paper; also woven fabrics, embroideries, laces, etc. Certain of these objects can be obtained on loan.

2. The collection of designs, which consists of some 70,000 sheets of illustrations of art industries of all nations. These mounted sheets are classified under various heads and arranged in cases for easy reference by manufacturers and students. To procure these designs, recourse has been made to illustrated works on ornament and art workmanship, and to the best serial publications of all countries. Opportunity is afforded of consulting and copying them, and the officials undertake to prepare special designs for fees, to be arranged.

3. The library and reading-room contain upwards of fifteen thousand volumes of art, industrial, and technical works; also about two hundred journals and periodicals relating to these subjects, which are taken in regularly and filed. In connection with this section there is an extensive series of foreign directories, trade catalogues and address-books of other countries.

The above three departments are open free to the public.

4. Mechanical and Technical Division —

(1) The office for specialized trade information —

(a) Patents, merchandise marks, and trademarks. Here patents can be secured and trademarks registered.

(b) For furnishing information on all kinds of motors, machines, tools, raw products, and manufactured goods.

- (c) For supplying literary advice and references, from technical works and replies to general technical questions.
- (2) The experimental research department arranged for the trial and testing of gas, benzine, and petroleum motors, steam engines, water wheels, turbines, electro-motors and all labor-saving machinery, at agreed charges.

5. The chemical laboratory for investigations of all kinds relating to technical and industrial chemistry. It is prepared to undertake analyses and to carry out more extensive researches for fees, to be arranged. The official testing station for paper is in connection with this branch.

6. A permanent exhibition of modern industry and art. There are also held in connection with this department temporary exhibitions of special departments of manufactures.

7. Issue of the official organ of the Bavarian Industrial Museum.

8. The delivery of public addresses and lectures during the winter months, embracing all subjects of art applied to industry and every branch of manufacturing activity.

An interesting feature in the activity of this museum is the "Gewerbe-Archiv" or factory register, which includes an account of all the more important industrial establishments in Bavaria contributed by the manufacturers themselves on a special form. The particulars given are as follows: The name and address of the firm; when founded; articles produced; whether special to this undertaking; character of motive power employed; nature of machinery used and the number of each kind of machine; patents, trademarks, etc., owned by the firm; exhibitions in which the firm has taken part and prizes and medals awarded; number of workpeople employed and annual value of production. Many thousands of manufacturers have contributed to this register. Every effort is made to keep it up to

date and to render it accurate and complete as a record of the whole of the industries of Bavaria.

Museums of this type, though, of course, on a less comprehensive scale, are numerous throughout the German cities. The German people attach the greatest importance to them as an important factor in the development of trade and industry.

Many phases of this question of supplementary education have been left untouched. It is many-sided and bristles with problems and complications. These are all capable of solution if the same acumen, business foresight, and wise management be brought to bear upon them as has been displayed in the building-up of the industries. As Mr. Arthur D. Dean says: —

In considering a State policy for providing industrial education, it is necessary to keep constantly in mind one basic principle: If industrial education means a re-directing and adapting of our education to fit the economic and social needs of our people, then it is a problem that has no single solution; there will be as many school classifications as there are groups of industries; nearly as many solutions as there are types of communities; and there is no single inflexible course of study and no single line of procedure.

VII

APPRENTICESHIP

"The King is dead! Long live the King!"

ONE of the main arguments used to advance the cause of industrial education is, that the apprenticeship system is dead, and that the trades and industries stand largely in need of a new type of education which will give the skill and all-roundedness formerly acquired through that system. It is almost impossible to read an article or listen to a speech on the subject of industrial training without finding this argument prominent.

There is danger that the energetic propaganda now being waged for industrial education in schools, will cause the educational features of a rational apprenticeship system to be ignored and lost sight of. If industrial education had no other claim to national consideration than the supposition that apprenticeship is dead, its position would not be a very sound one. Fortunately there are a number of more vital arguments, and it scarcely needs the support of one which is true only to a slight extent.

When it is stated that apprenticeship is dead, the conception that is formed is that of the system as it grew up and flourished under the fostering care of the trade guilds of the Middle Ages. There would be as much reason in saying that the science of illumination is dead because our modern system of electric lighting bears little relationship to the rushlight of one or two centuries ago, or that steam transportation is dead because the modern locomotive can scarcely be recognized when compared with the first engine invented, as there is in saying that apprenticeship is dead because the present type, rendered necessary by

the development of modern industry and the subdivision of labor, bears no resemblance to that in use when production was carried on under entirely different conditions.

Whatever defects the old system had, and they are readily admitted, the merit must be accorded to it of having produced a race of mechanics and artisans possessing the highest type of skill. Dr. Snedden, Commissioner of Education for the State of Massachusetts, has said: "The apprenticeship system, as interpreted by some of the great vocations of the Middle Ages, was undoubtedly the most perfect system of vocational education that the world has ever seen."

Long after the guilds had outlived their usefulness, and their functions had become unnecessary or had been absorbed by other agencies, the apprenticeship system continued, but in a condition practically shorn of all that had made it effective. The English guilds have disappeared, but in Continental countries, notably Germany and Austria, persistent efforts are being made to revive their powers and restore their usefulness.

Membership of a guild was always an absolute guaranty of thorough craftsmanship, which everybody recognized. It has seemed to me that here is one of the lost opportunities of trade-unionism. If the possession of a union card were regarded as incontrovertible evidence that its owner had learned his trade in a recognized manner and had not stolen it, and that he was a skilled craftsman, much good would result to the industry, and a great deal of unfounded prejudice against unions would be removed.

At present, as far as I have been able to learn, there is no *adequate* test of a man's ability before his admission to the union. Of course, under present conditions, if this plan were adopted, the unions would not include the majority of the workers, but grades could be established and examinations conducted, on the passing of which men would rise from one grade to the next higher. The wages of men in the different

grades would vary, and it would be necessary, from the union point of view, to make and enforce regulations concerning the number of men in each grade allowed to each employer, in order that there should not be a preponderance of low-paid labor. The unions should make a study of the powers and functions of the ancient guilds and seek to absorb the best of them.

As an illustration of the powers of the revived modern guilds in Europe, particularly in regard to the apprenticeship system, let us take the methods adopted in Austria. The laws of 1883 and 1897 made efforts to bring these methods into harmony with modern industrial conditions. The provisions of these laws are still in force, and what is more, are in operation. By law the duties of these guilds are said to be:—

1. To promote harmonious relations between employers and workmen in regard to the organization of the labor forces, the provision of guild shelters or lodges (for traveling workmen), and finding employment for those out of work.

2. To provide for a satisfactory apprenticeship system, provide regulations regarding the industrial and moral instruction of apprentices, length of service, examinations, etc.

3. To create arbitration committees for the settlement of disputes.

4. To promote the establishment of, and themselves to establish and maintain, trade schools.

5. To care for sick employees and apprentices.

6. To make an annual report of the work done.

The regulations drawn up for apprentices impose upon the employer the duty of looking after the morals of the apprentice both inside and outside the shop or factory, and thus one of the most desirable features of the old system is being restored. He is also required to allow apprentices, who are not free from the obligation to attend an industrial continuation school, the necessary time for that attendance,

and is made legally responsible for it. In Germany much the same method is being adopted and the same class of legislation has been enacted. In Europe, then, the system of apprenticeship is regarded as a factor in industrial education and as a matter worthy of Government regulation.

The old system, however, possessed many undesirable features. It was uneconomic. The service required was too long, and in the latter years of that service, though doing the work of a journeyman, the youth received the pay of an apprentice. Looked at in the light of our modern system of production and distribution, it is fortunate for the workers that it has passed. It was unfortunate for workmen that during its gradual decay nothing was devised satisfactorily to take its place and that it was allowed to live a lingering death, in methods that neither gave efficient training to the employee nor skilled workmen to the employer. The term "apprentice" was retained, but it was a misnomer, and the so-called apprentice became in reality a helper, a laborer, knocked from pillar to post and receiving no adequate instruction. The whole genius of the shop was against him.

The boy wishes to obtain all possible information in the shortest possible time, and he also desires to get an all-round knowledge of his trade; that is, an opportunity to work in every department of the industry. The foreman, representing the employer, and taking a narrow view of his own interests, works for economy, for cheapness and speed of production. He thinks these ends can best be achieved by restricting the boy to one machine and to one operation. The boy wishes to push himself forward, and the foreman only responds under the greatest pressure. The spirit of the foreman rules the shop, and it would not bode well for the journeyman who, out of his good nature and sympathy with the boy's desires, enters on his time-card, "Thirty minutes spent in showing Johnny Jones the how and the why of the Smith job."

As evidence of the inadequacy of the instruction received by the apprentice in the machine shops, the principal of a "technological school," established by the Baltimore and Ohio Railroad Company, said in 1886: —

Investigation in the shops by conversation and observation has shown that many boys or young men had completed, or nearly completed, their apprenticeship without being able to tell the difference between cast and wrought iron, without knowing whether steel is a native or manufactured product, and equally ignorant of many other simple though important and significant facts which are intimately related to their trades.

The causes which brought about the decline of the old apprenticeship system are to be sought for in the social and economic changes forced upon industry by the extensive use of machinery. These causes may be summarized as follows: —

1. The growth of population has rendered it profitable to produce goods of all kinds on the largest possible scale. This prevents any personal contact between employer and employee. Apprenticeship is only good so long as the apprentice has time to learn and the employer, or some one deputed by him for this specific purpose, has time to teach.

2. The substitution of machine for hand labor, the extensive use of automatic machinery for performing single and special operations, in which as a rule no skill is required, and the subdivision of labor have all played their part. It seems to be a fact that for the great bulk of the workmen in the factories, who perform the purely mechanical operations, little knowledge beyond the process on which each is engaged is either required for, or is necessary to, the successful performance of the special operation. It is scarcely considered necessary even that the operative shall know anything about his machine, as in a large number of cases a special mechanic is provided to make all adjustments. Those who have a wide knowledge of any industry are generally those who direct the work. To call men shoe-

makers who make the hundredth part of a shoe, or cabinet-makers who can only turn a table leg, is to convey altogether wrong impressions. Indeed, in these days it is difficult to define any particular trade, and those engaged therein find the definition no easier than does the outsider. As long ago as 1900 the following definition of a machinist was adopted by resolution of the International Association of Machinists and the National Metal Trades' Association: —

A machinist is a competent general workman, competent floor hand, competent lathe hand, competent vise hand, competent planer hand, competent shaper hand, competent milling machine hand, competent slotting machine hand, competent die sinker, competent boring mill hand, competent toolmaker, and competent linotype hand. To be considered a competent hand in either class he (the machinist) shall be able to take any piece of work pertaining to his class, with the drawings or blue-prints, and prosecute the work to successful completion within a reasonable time. He shall also have served a regular apprenticeship or have worked at the trade four years.

It is probable that if this definition were revised in the light of the industrial expansion of the past ten years, it would include a number of additional divisions.

In the Chicago packing-houses the men have been graded in more than thirty distinct operations, and twenty rates of pay established. An ordinary laborer can be efficiently trained to perform any one of these operations in three or four days. In the old days a cattle butcher, with the assistance of one or two helpers, was able to kill and dress a bullock, and it required from three to five years to become proficient. Now the all-round butcher is only to be found in villages and very small towns, where specialization and the subdivision of labor have not made such inroads on old trade practices.

In carpentry and other forms of woodwork the introduction of machinery has brought about remarkable changes. Only the old house carpenter and men who have learned

their trade in the villages, smaller towns, and in Europe can now make doors, shutters, sashes, or frames with any degree of dexterity, finish, or accuracy. That work has gone to the planing mill, and the work of the carpenter generally consists in fitting its products together. It is even possible to buy a whole house at the mill, with all the parts marked and numbered ready for fitting. It is a waste of effort to fight against this minute subdivision, which must be regarded as inevitable, though highly undesirable from the point of view of the all-round development of the worker. The industry gains and the worker suffers. Ruskin says: —

It is not, truly speaking, the labor which is divided but the man — divided into mere segments of men — broken into small fragments and crumbs of life, so that all the little piece of intelligence that is left in a man is not enough to make a pin or a nail, but exhausts itself in making the point of a pin or the head of a nail.

3. Many employers do not want apprentices. Others say that they cannot get them. Others, again, complain bitterly that their numbers are restricted by the unions. Manufacturers have probably themselves largely to blame for this limitation, owing to their failure to teach the apprentice his trade, and their practice of using untrained labor where possible to avoid the employment of journeymen, but it is very much open to question whether there are even as many apprentices as the rules of the unions allow. The journeymen tailors' union permits each journeyman to have one apprentice, yet the returns in 1903 show that there were only 625 apprentices reported, while the membership of the union was about 14,500, and investigation shows that there are but few apprentices in the tailoring trades to-day.

The right of the unions to make these regulations cannot logically be denied. They have just as much right to be seriously interested in the question of entrance into

their trades as the doctor, lawyer, or minister has to make regulations and to inquire into the qualifications of those entering the professions to which they belong. Not much objection is raised to making the professions close corporations, but directly the same process is applied to the industries an alarming outcry is made. Those manufacturers who object to taking apprentices do so largely on the ground that they do not pay, but they have probably formed this opinion on insufficient evidence and badly organized trials of the system. No instances are known where a properly organized system of apprenticeship, carefully designed to train the worker, has been established and has failed to pay in every sense. Mr. E. P. Bullard, of the Bullard Tool Machine Company, distinctly states that apprentice training pays "morally, ethically, and financially in every way."

The "Printing Trade News," New York, says:—

The matter of efficiency is a devious one and the economic conduct of a printing establishment is arrived at in various ways. Take the case of the Donnelley Company, of Chicago. This company incurs an annual expense of \$10,000 in the maintenance of its school for apprentices. And yet in the increased efficiency of workers thus obtained, and the consequent efficiency of the plant, this apparently altruistic scheme pays.

Mr. Charles Booth, in his "Life and Labor in London," speaking of London employers, comes to the conclusion that the rank and file of them find that it pays best to trust to being able to obtain skilled workmen who have been trained by some one else; in other words, to shirk their share of the common burden—a form of economic parasitism. He concludes that practically the whole of the London employers in several trades are parasitical upon the provincial employers, as regards the work of industrial training. This is probably just as true of the large American cities. Foreman after foreman, when asked where he gets his skilled workmen, will say, "Oh, they

come to us," not mentioning any special inducements offered to encourage the coming.

Another objection of the employer, which, perhaps, has a sounder basis, is the fact that it is difficult to get boys to stay. In the glass bottle industry, where the indenture system largely prevails, union employers frequently complain that apprentices do not serve the five years' term, but run away and seek employment in non-union shops. The same complaint is made in other industries. In this as in many other walks of life there is needed an entirely new sense of the sacredness of a contract, wisely and voluntarily entered into. No employer in these days would think of prosecuting a refractory apprentice for breach of contract, as an unwilling apprentice would be a constant source of economic loss and a perpetual source of annoyance. There is no law which will permit the binding out of a boy and compel him to remain at the work to which he is assigned. There should be a public opinion in the shops which would render it impossible for an apprentice, who was receiving a square deal from his employer, to leave his employ and be comfortable in any other position while his contract was still unfulfilled.

4. Journeymen have no desire to instruct apprentices. They have neither the time nor the inclination. Generally the apprentice is unknown to the man under whom he is placed, and is too frequently looked upon as an interloper who, when he has become proficient, will take the place of the man who has instructed him. However, in the present condition of things there is little need of any help, even of that which the journeyman may give. The tendency is to turn the apprentice into a "specialist," that is, to restrict him to the working of a single machine which performs one operation, or turns out one special part of the finished product.

There is a marked difference between the professional specialist and the industrial specialist. The professional

specialist has been thoroughly well grounded in all the underlying principles of his profession and out of the depths of his knowledge selects his specialty. The mechanic or artisan, on the other hand, is all too frequently a specialist because he can do nothing else, and remains a specialist on account of his ignorance.

5. The boy is disinclined to bind himself. Freedom is the watchword of the age. Mobility has always been one of labor's chief assets, and the boy is no less anxious than the man to be free to move as his whim and fancy dictate. The modern boy dislikes to be controlled, and in the present prosperous state of the country does not hesitate to "throw up his job" rather than carry out an unpleasant task. The terms "bound" or "serving" are thought to be highly objectionable, and the old-fashioned "master" and "man" have been euphemistically transformed into "employer" and "employee." Lack of wise parental control has had a great deal to do with bringing about this state of affairs. The old maxim that "the child should be seen and not heard" is entirely out of date.

6. The length of time previously thought to be necessary for the learning of a trade has also done its share in bringing about the decline of apprenticeship. In many industries the interests of the employer have been mainly considered, and the low wages paid to the apprentice during his latter years have not reconciled him to the service. In most cases the practice prevails of paying the apprentice a fractional part of the journeyman's wages even where the work turned out is of the same quality, and boys naturally resent this. The age at which boys enter industry is much higher than formerly, but notwithstanding this increase in age, wages have remained stationary or nearly so. Both the employers and the unions have been responsible for the excessive length of apprenticeship. The former desired to obtain cheap labor and the latter to prevent their ranks from becoming overcrowded.

7. There is a widespread impression that a trade can be learned without apprenticeship, and indeed in these days it does seem possible to learn a trade by the system of casual labor. In an investigation of 124 cases in London, it was found that in the building trades 55 had been regularly apprenticed, 27 had been trained by their fathers, and 36 had picked it up, or as the labor phrase has it, had "stolen" it.

This process of "stealing a trade" is a great economic loss to the employer and to the industry and is a still greater loss to organized labor itself. The plan is somewhat as follows. A boy or man starts work on a certain machine or process and in a short time demonstrates his incapacity. After spoiling a quantity of work and disorganizing the factory, he is indignantly "fired" by the foreman. He is now in possession of a small modicum of experience, and with this as a basis gets another "job" and repeats the same process, but in this case the period of his employment on the one machine or operation is somewhat longer, but his dismissal eventually follows. By going through this procedure several times he at length reaches the stage where he can retain his position as long as he requires it.

In newer countries like America, where the demand for workers is so great, the proportion of men who thus "pick up" their trades is much higher than in England or Continental Europe. This state of affairs exists very largely in the building trades, many carpenters, bricklayers, and plumbers never having been thoroughly trained. Out of fifty men employed on one building as carpenters, there was only one who could lay out a staircase.

An editorial in the official journal of the plumbers complains: —

There will always be cities or towns enough that are unorganized that will turn out helpers and apprentices in numbers large enough to supply the demand. . . . The scab shop and non-

association employers will also continue to manufacture plumbers at a compound rate. . . . The journeyman is also responsible to a great extent for this condition of affairs, because in years past, when plumbing was considered more of an art than it is to-day, and the wages were comparatively higher, the journeyman, to use the language of the street, "got the swelled head" and thought he must have a boy to carry his overalls around, and to shine his tools for him, and walk on the other side of the street with his tool-bag, lest society should see him with a dirty carpet-sack on his shoulder.

This system of picking up a trade has a decided influence upon the moral fibre and citizenship of the workman. A man who has been thoroughly trained along any distinct line, and has achieved, through that training, an intelligent technical skill, looks upon his trade as something worthy of his utmost efforts and he does his best work, hindered, of course, by the commercial necessity for speed. On the other hand, the man who has stolen his trade will regard it as simply the tool, often despised, by which he obtains his living, and inferiority of workmanship will be perfectly satisfactory to him so long as it passes muster.

There are some trades in which a system of apprenticeship cannot be satisfactorily carried out. They are those where, by the division of labor and the use of machinery, the functions of the workman have been pared down to processes which are so easily learned that any prolonged period of training is not only unnecessary but economically wasteful. In the textile trades modern automatic looms for weaving are so easily managed that a case is known where a girl, without any previous experience, learned to run fourteen looms within a week, and in many other industries the average rate of wages can be earned after two or three weeks' training. President Gompers of the American Federation of Labor, says, "Modern methods of manufacture, with their division, subdivision, and specialization, have to a large extent rendered nearly superfluous and therefore largely eliminated the all-round skilled workman."

If this is true, or only partially true, is the education of the workman to be abandoned? There are two sides to the education of any man, — education for his work and education for his leisure, education for his living and education for his pleasure; and for the unskilled man whom economic necessity confines to the performance of one operation, the latter side of education will have to be stressed. Closer investigation will probably show that there is a type of instruction which will add to the earning capacity of even this man, by increasing both the quantity and quality of his output. Information regarding the construction and intricacies of his machine and its adjustment for minor defects, some knowledge of the material in which he is working, some information regarding the operation he is performing and the part it is to play in the completed object, will broaden his outlook and probably induce him to equip himself for the next higher stage in the factory.

“While this all-round skill is ceasing to be of especial benefit to the ordinary workman, on the other hand, economic interdependence is becoming greater, the relationship of process to process and man to man is growing more complex, and it is becoming more and more important for every man to know many things in order to keep his activities in efficient social and vocational coöperation with those of others in different walks of life.”

Even for the industrial specialist there is a system of apprenticeship coming into vogue. It has been adopted by the National Association of Machine Tool Builders, and it assures that specialists will not only continue, but also that the system will be considerably extended. If a large majority of the workmen are to be specialists, and about this, judging by the modern trend, there cannot be much doubt, then the apprenticeship system should recognize this condition. Accordingly, in the “Special Apprenticeship System,” the period of training varies from one to two

years, and is immediately profitable both for employer and employee. There is a trial period of two hundred and forty hours, and after successfully passing this, an engagement is given in one of eleven different departments, turning, vertical boring mill, horizontal boring mill, planing, milling, drilling, grinding, erecting, turret, vise, scraping. Not less than twelve cents an hour is paid from the commencement, and at the end of a year and a half twenty cents an hour can be earned. At the end of a year's service the apprentice can earn more than is paid under the ordinary scheme after four years' service.

If, as is now generally conceded by all industrial authorities, apprenticeship is necessary, let us next inquire what, in the light of modern industry, are the features that should be found in an efficiently organized system. These features appear to be: —

1. Apprentices should be carefully selected. It is no kindness to train a boy for an industry for which he has neither fitness nor liking. This selection should be governed by both physical and mental considerations. The general practice is to take boys not younger than sixteen, though some manufacturers are now adopting fifteen as the age of entry into their works. The age of sixteen seems to have been fixed owing to the idea that before that age boys are not physically capable. If after a careful medical inspection boys were allowed to enter the trades at fourteen years of age under proper conditions and with a legal proviso regarding further education, our problem would be greatly simplified. The fact that a boy has reached sixteen years of age is no guaranty that he is either physically or mentally fit to enter practical industry. In addition to this physical fitness, boys should have passed through the eight grades of the elementary schools. It is probably true that if the industries were recruited solely from those who were eminently fitted, they would soon be depleted, yet means should be taken to prevent the entry into any particular

industry of those who are manifestly unfit. Even with the most careful selection it will not infrequently happen that as the apprenticeship proceeds some boys will be found who do not like, or are not suited for, the particular trade. If this is founded on reason and not inspired by a mere desire for change, an opportunity should be afforded the young apprentice to enter another trade before it is too late. To prevent these misfits, a probationary period of sufficient length is generally advisable.

2. The apprentice himself should be anxious to learn the trade and his parents should be willing for him to do so. No boy should be taken into a trade in deference to the wishes of his parents, if those wishes are in opposition to his own; and while it is necessary and desirable in most cases to secure the active and hearty coöperation of the parents, instances have been known where boys have "made good" in an industry strongly objected to by the parents. Forcing a boy into a trade he is unwilling to learn, is good neither for him nor the industry.

3. The wages paid must be such as are mutually satisfactory to all parties to the agreement, and the increases sufficiently large and frequent to make the apprentice feel that his growing skill and knowledge are recognized in his pay envelope. In this, as in many other matters relating to employer and employee, more mutual trust and confidence is required. On the one hand, the apprentice must not be exploited for undue profit, and on the other, the apprentice must recognize that he owes it to his employer to give the greatest possible return for the efforts expended in his training. Some firms have a system of giving a substantial bonus on the successful completion of the apprenticeship. If this bonus were graduated according to a specified scale based on the manner in which the contract was fulfilled, it would probably have an effect on the behavior of the apprentice and the character of the work done. Such bonuses are given by the General Electric Company,

Lynn, Massachusetts (\$100), and the Allis Chalmers Company, Cincinnati (\$100). Many English firms adopt the same plan.

4. Adequate instruction must be given to the apprentice along every line, academic, theoretical industrial, and practical industrial. The greater part, if not all, of this academic instruction ought to be given during working hours, the apprentice receiving the same rate of pay as though he were actually working in the shop. All instruction of apprentices is best given by men especially appointed for the purpose and relieved of all other duty, and not left to foremen or journeymen, who have too much on their hands to perform these other and extraneous duties satisfactorily. At the end of each year's apprenticeship an examination on the work of the year would be a test of progress. No apprentice should receive an increase in salary or make any progression in the shop without successfully passing this examination and presenting a certificate signed by the foreman testifying to a satisfactory year's record. The committee conducting this examination might with advantage contain representatives of the employees, in order that, in the case of failure of any candidate, no grounds could be given for accusations of unfair treatment. If the academic training is placed on the same footing as the actual shop work, the young apprentice will regard it as of equal value and be much more liable to make progress. With regard to this academic work different firms have different methods. The General Electric Company, for instance, teach from theory to practice, while the New York Central lines in their schools for apprentices proceed from practice to theory.

5. The period of apprenticeship should be just long enough, and no longer than is actually necessary, to accomplish the end desired — which is to make an efficient workman, and to implant the desire to achieve distinction in the chosen trade. Industrial life is too swift and the changes

in conditions too rapid to allow of seven long years being spent in learning a trade that under proper conditions and systematic organization could be learned in three or four.

6. Provision should be made for regular progress through the shop in order that the apprentice may have experience on many kinds of work and on different types of machines. The time for specialization comes after this process has been gone through, as then the apprentice will have knowledge and ability to choose his specialty and not have it forced upon him. The status of the apprentice must be kept as high as possible, and the practice of running errands, carrying material to and from a job, and other minor tasks which have no distinct bearing on the trade being learned, should not be allowed beyond what is reasonably necessary. A comparatively new group of mechanics — the electrical workers — have very unwisely defined an apprentice as one "who is employed to do errands, carry material to or from the job, attend to lockers, and assist journeymen in testing." An individual so employed is not an apprentice, but a "helper" or laborer. The artisan himself is the one who reaps the greatest benefit from apprenticeship. He is able to work in all branches of the industry and thus to attain that industrial elasticity or adaptability which renders him less liable to be disturbed by internal changes and developments in the industries. He is not dependent on a single machine or process, and his whole outlook on life assumes a different character.

7. Apprenticeship is important enough to warrant its being made a matter of governmental regulation. One outstanding feature of the systems of industrial education in Europe is the protection offered to the apprentice by Government ordinance.

In Germany only those persons have the right to direct apprentices who are at least twenty-four years of age, and have themselves completed the term of apprenticeship, or

have exercised their trade without interruption for at least five years either as masters, foremen, or in some similar capacity. The superior administrative authority can accord this right to persons not fulfilling these conditions, but before doing so it must take the advice of the guild to which the applicant belongs.

In England, in the reign of Elizabeth it was in general required that any person exercising a trade should have previously served an apprenticeship of seven years, but by later statutes this provision was abolished.

In Switzerland, notwithstanding the opposition of the employers, a general apprentice law was passed on a referendum vote in 1906 by a decisive vote of the whole of the republic. This law is subject to adoption by each canton, and nearly half of these have availed themselves of its provisions. By this law any employer who teaches a trade, or accepts boys or girls as apprentices, must allow at least four hours a week during the daytime for attendance at an industrial school. The apprentice must have completed the elementary school course and be at least fourteen years of age. For admission to a mercantile business the minimum age is fifteen. The contract entered into, stipulates that it is the duty of the employer to look after the bodily and mental welfare of the apprentice, who must have ten hours' continuous rest. No overtime is allowed until sixteen years of age. At the end of his term the apprentice must pass an examination conducted by a Government appointed board. In case of failure he may present himself again after a period of six months. The enforcement of these provisions is in the hands of the Minister of Commerce and Industry.

The State of Wisconsin has a workmen's compensation act, one of the provisions of which deals with apprentices. Any agreement must be in writing and the State Industrial Commission furnished with a copy. It must be agreed between the parties that the whole trade be taught, the

time on each machine or process being specified in the agreement. The working time must not be more than fifty-five hours per week, five of which are to be given to instruction. The indentures are to be at least for a year, and for those under eighteen not less than two years. It is the object of the new law to remedy the complaint that apprentices leave before thoroughly competent, in order to get higher wages, and also the contention that boys are kept at special work and processes instead of being given general instruction.

The principle of Government intervention in labor concerns is becoming more and more common. So far the question of wages has been generally left to the law of demand and supply, but it is a significant fact that the British Government found it necessary to settle the great coal strike (1912) by fixing a minimum wage.

Strangely enough, the Spanish Government is engaged in a similar task. The owners of the Spanish mines refused to grant a fifteen per cent increase of wages. The Government, therefore, decided to prohibit temporarily the exportation of coal, to suppress the usual duties on foreign coal, to fix a minimum price to be charged, and to pass a bill making regulations for miners and establishing the principle of a minimum wage.

The Governments of the various Australian States have taken upon themselves (by wage boards composed of an equal number of employers and employees approved by Parliament) the task of fixing wages and hours of labor, and strikes and lockouts are absolutely forbidden in the Commonwealth. Any person or organization responsible for anything in the nature of a strike or lockout is liable to a penalty of \$5000 under the Federal Act.

8. Some attempt must be made to control or direct the apprentice out of working hours. Intensified production and the gradual adoption of the eight-hour day will give more time for leisure, and if this be not rightfully spent

economic loss will result from the apprentice not being in a fit condition to perform his shop work satisfactorily. There is also moral danger through visiting questionable resorts and engaging in doubtful amusements. It has already been pointed out that this moral direction of the apprentice was one of the features of the ancient guilds. He lived in his master's house, attended his master's church, and was altogether under his control. The whole result was that he became a better man, and the better the man the better the craftsman. Under this system the apprentice was a power in the land, and in the manifestations of that power not always amenable to the control of his master. When Oliver Cromwell marched his army into London to dissolve the Long Parliament, it was a matter of concern with him on which side the apprentices would be arranged. Some substitute should be found for this moral control previously exercised by the guilds. Where apprenticeship systems have been reestablished and an official appointed to direct the training and work of the apprentice, it is generally assumed to be part of his duty to exercise general oversight out of working hours as well as in the shop.

Lest it may be considered that the features above mentioned are counsels of perfection, it should be pointed out that almost all of them are embodied in one form or another in various systems that have been established within recent years.

In almost every European country apprenticeship is being revived, and where compulsory attendance at continuation schools is in force, the problem is much simplified, as then the employer has to concern himself with the shop instruction only and to see that the apprentice attends school as required.

In the United States at present there seems a country-wide campaign in the interest of apprentices. An investigation has recently been carried out by the Apprenticeship

Committee of the United Typothetæ of America. The following questions were sent to every member: —

1. Do you employ apprentices? (Not errand boys — but regular apprentices actually learning the trade.)
2. How many apprentices? (Composing-room, platen press department, cylinder press department.)
3. How many errand boys or other boys do you employ?
4. Are these destined to become apprentices?
5. Do you give special attention to the training of your apprentices?
6. If so, will you please outline what your method is?
7. What provision is made for their advancement?
8. What rate of wages do you pay — and how often do you increase it?
9. Are your apprentices indentured?
10. If so, for how long?
11. Is parent or guardian of apprentice made a party to the indenture?
12. What suggestions can you offer to the committee?

In addition to answering the questions propounded, the employers were asked to give the committee the benefit of their experience along these lines, writing freely regarding conditions in their own localities and offering such suggestions as their experience seemed to warrant.

Forty States and one hundred and seventy-eight cities and towns replied. The number of individual firms reporting was 486. Over half these shops give no attention whatever to training apprentices. Many of those who do, have a written agreement with stated periods of advancement. The wages paid to beginners varied from \$2 a week to \$9, which was the highest reported. Increases are generally made at the expiration of each six months' service. One interesting and alarming feature of this investigation was the discovery that 397 shops were employing 846 errand boys and that for 717 of these no opportunity for advancement was provided.

There are many schools in operation, conducted by private firms for the instruction of their own apprentices.

Many of these schools are admirable in every way and are performing just as useful a social, educational, and economic function as public industrial schools. It is a question for serious consideration whether these private schools, carried on under proper conditions, with approved teachers and adequate equipment, should not be subsidized by the State and subject to Government inspection.

VIII

VOCATIONAL GUIDANCE

ALL advocates of industrial education are agreed that some measure of vocational guidance and direction is necessary, if, on the one hand, our boys are to find congenial and profitable employment, and on the other, if the industries are to be recruited from boys adapted or adaptable to them. The ultimate success of all our efforts will very largely depend on the ability of the schools and other social organizations to furnish some adequate measure of expert vocational guidance and direction. A recognition of this fact has led to the formation of various agencies to bring about the end desired.

In England the organization has taken the form of "Apprenticeship and Skilled Employment Associations," and in America of "Vocational Bureaus." In America vocational guidance, up to the present, at any rate, "does not mean selecting a pursuit for a child, nor finding a place for him." In England one of the functions of the association is "finding definite and suitable openings for the children." Nearly forty-five years ago the London Jewish Board of Guardians took up the matter by instituting a loan fund out of which premiums might be advanced to the parents, and repaid from the wages earned by the apprentice. In 1886 a similar fund was started for the Christian children of East London, and these boards have apprenticed more than five thousand and one thousand children respectively. During the past few years the movement has spread to the elementary schools. Pupils are placed at work either as apprentices, or as pupils in the London County Council Day Trade Schools, or as learners (not indentured) in a trade. In the latter case, care is taken that the organization

of the firm is such that the learner has a real opportunity of actually learning the trade. The plan adopted is: —

1. One or both parents must make application. No child is placed without this.

2. The teacher is consulted as to the character and ability of the child.

3. An inquiry is made into the financial condition of the parents and also into the child's health, age, and school career.

4. After further consultation with the parents a suitable occupation is selected and an opening sought for, if one is not immediately available.

The Apprenticeship and Skilled Employment Association carries on all arrangements with the employer and supervises the agreement. A special form of indenture is used which allows a representative of the association to act as a party, with power to cancel the agreement in case of failure either on the part of the employer or the apprentice.

One most desirable feature of the whole scheme is the fact that the work is not considered finished when the boy is placed. A watch is kept over him by a "visitor" or "guardian" who is always ready to offer friendly advice or counsel. Periodical reports are made by the employer to the association. This oversight does not concern itself wholly with the boy's work; it takes into consideration his leisure also, and encourages and stimulates his attendance at evening schools, and participation in healthy forms of amusement.

In preparation for its functions the association has collected a large amount of industrial information concerning the different trades, the method adopted in teaching the trade, the wages paid, and future prospects. So far this movement has been restricted to the skilled trades, but there are large numbers who will enter industry lower down in the scale, and for them help is perhaps even more needed.

One of the originators of this movement in England has said: —

May we not look forward to a time when there may be an "after care" committee in touch with every school, which shall see that each child who needs the help should be placed in the best work possible, skilled or unskilled, where necessary, and that each child shall receive a continuance of education, so that the promise shown in school life may be fulfilled and the opportunity be given in every case for the full development of ability, intelligence, and character?

This matter is considered of such importance that it has become a subject of legislation by the Imperial Parliament. The Labor Exchange Act of 1909 gave authority to the Board of Trade to establish and maintain labor exchanges, and the Education Act of 1910 gave power to local education authorities "to make arrangements, subject to the approval of the Board of Education, for giving to boys and girls under seventeen years of age assistance with respect to the choice of suitable employment, by means of the collection and the communication of information and the furnishing of advice."

These two measures brought together two bodies which up to that time had been acting independently — the Board of Trade and the Board of Education — both central bodies having control over the whole of the British Isles except where otherwise stated. After consultation a joint memorandum was issued by the two bodies, which reserved to the education authorities the right of directing boys and girls with regard to their employment for six months after the termination of their school life. As a result of the action of these two bodies, juvenile labor bureaus are in process of establishment in all the large towns and cities of Great Britain.

The method of operation in the different cities is practically the same. Both bodies work together. All the expenses incurred are met by the Board of Trade. The head

of the bureau is appointed by the Board of Trade after consultation with the local education authorities.

In the city of Birmingham there is a "central care committee" organized as a subcommittee of the education authority. This includes six representatives of that body, four social workers, four teachers, four employers, and four labor representatives, together with the superintendent of the labor exchange and the medical inspector of schools.

Owing to the work of these committees the enrollment of pupils at the evening continuation schools in Edinburgh (Scotland) increased in four years by 136 per cent. In the same city, in 1909, 4270 pupils were reported as leaving the elementary schools. Of this number 3074 announced their intention to enroll in continuation classes. A third of these (1129) made application for employment, and of this number 740 were placed by the bureau in suitable employment. These positions included sixty different trades in addition to office work and miscellaneous businesses.

In the city of London a large number of advisory committees have been formed to coöperate with the labor exchanges under the auspices of the Board of Trade. The elementary school teachers send to each committee particulars concerning the children about to leave school.

The progress of this work has shown the necessity for special training of those who are to engage in the work of vocational guidance. To provide this, the Board of Trade and the London County Council have drawn up an experimental programme for professional instruction, and provided classes under the direction of competent and experienced teachers.

The manual issued by the Apprenticeship and Skilled Employment Association above referred to gives an account of the conditions prevailing in nearly two hundred different trades, and in each case the details given have been revised by an expert. In this manual it is suggested that the fol-

lowing features should be noticed and an inquiry made as to whether they are present in the particular workshop or factory into which it is intended to place a boy, and also whether they are present in the trade generally.

CONSIDERATIONS OF HEALTH

Good

Some moving about.

Where exercise is not involved in the work, a special point should be made of a walk before and after work.

Work out of doors.

Airy rooms with open windows, rooms kept at a comfortable temperature.

Well-lighted rooms with the light coming from the back or side of the worker.

Short hours (the shortest prevalent are eight).

A full hour for dinner.

Facilities for getting a good hot dinner.

A clean pure atmosphere or adequate protection against dust.

Care to avoid danger of lead poisoning by the wearing of overalls, the use of oil to cleanse the hands, and the habit of washing the hands before eating.

No slack season and no time of great pressure.

Usually boys may be kept on as "hands" or may easily find work in the trade.

A trade may be carried on all the world over and a good all-round workman be sure of earning his living in it at home, or in the Colonies.

Bad

Sitting or standing long at a time without change of position.

Close rooms.

Basement rooms.

Excessive heat or cold.

Exposure to the heat of a furnace.

Constant wetting of the hands.

Frequent sudden changes from a hot damp atmosphere to a cold one.

Badly lighted rooms where artificial light is used in the daytime.

Long hours indoors (the longest allowed are ten).

Only half an hour for dinner.

No facilities for heating up dinner, or for buying a hot dinner cheap.

Working in an atmosphere where there is much dust which must be breathed or where the air is heavily scented.

Contact with lead as in paint, enamel, and the lead of type. Careless habits with regard to this.

Slack seasons alternating with periods of pressure and overtime.

Boys may be discharged not fully trained and find it hard to get work or complete their training.

A trade may be confined to one town, or to one district in a town, and a man obliged to leave the district might be unable to get work.

Good

A boy may insure that he learns to work any new machinery that may be introduced.

A boy may learn the theory of machine construction both in the workshop and at technical classes so that when new machines are introduced he will be as competent as any one else to work them.

Trades do not die sudden deaths, and a boy should leave a dying trade and turn to something else. The better his general education the more easily will he do this.

A definite written agreement may be come to, under which it is known exactly what parts of the trade a boy is to be taught.

At technical classes a boy may learn other processes of his trade and learn, too, their connection as a whole.

Bad

A trade may consist of making things by hand, and machinery may be invented which cuts out hand-made goods.

A boy may learn to work machines which afterwards are driven out by new machines of a different pattern.

A boy may learn a trade which afterwards dies out altogether, from a change of fashion.

A boy may be in a good trade and yet he may be vague as to what parts of it he is to learn. He may end by learning nothing.

A boy may be in a skilled trade and yet he may be kept to one small process only.

The National Conference on Vocational Guidance, held in Boston in 1910, stated that "one large aim in vocational guidance is to develop the methods and material by which the public schools may help fit their individual graduates for the work they are likely to do, and in this effort to use all the spiritual, economic, educational, and other agencies which may coöperate to bring about the most complete information and the best suggestions." It will be seen from this that vocational guidance is not only calculated to eliminate the square peg in the round hole, as far as the industries are concerned, but also to bring about a rational reform in the curriculum of the schools in order more directly to train for vocations.

Organizations to provide this guidance have been established in New York, Boston, Chicago, Cleveland, Philadelphia, Pittsburg, and many other cities. These, like all our educational reforms, started at the top; but, fortu-

nately for the industries and the boys who are to enter them, the movement is beginning to descend to the elementary schools.

These organizations had their birth in New York. The movement began with the efforts of some far-sighted and enthusiastic teachers to place pupils leaving school. The work was entirely voluntary. By 1908 every day or night high school had a teacher or committee of teachers to assist pupils to decide on a vocation and in learning how best to enter it. A series of leaflets is published giving all the necessary information concerning various industries and professions. These were used throughout the high school course in directing the attention of the students to the importance of choosing a vocation and definitely preparing for it. This work has been much more systematically developed in the high schools than elsewhere. If the high schools are to be considered (as they really are) as institutions almost solely for preparing the student for college, the professions, and commercial pursuits, the work being done will have little effect upon purely industrial occupations. It is generally admitted that their students do not enter and have no intention of entering either factory or workshop in a productive capacity.

It is only when the work of these organizations is brought right down to the elementary school that it will materially affect the industrial workers and benefit the vast majority of those who never enter a high school. Recognizing this, an investigation is now being conducted to acquire data and "in case the movement appears to grow out of a real necessity to formulate a plan for vocational guidance for the elementary schools of New York City."

Boston has five organizations working harmoniously together for this end. One of these is a committee of masters and submasters appointed by the Superintendent of Public Schools, with the definite purpose of commencing the work of direction before the pupils leave the elemen-

tary schools. The other organizations are the Vocation Bureau, the Women's Municipal League, the Girls Trade Education League, and the Boston Home and School Association. Inquiries have been conducted into more than a hundred occupations and the information gathered filed for reference. As an example of the thoroughness with which these investigations are carried out, take the following sample blank as filled in for a shoe factory:—

THE VOCATION BUREAU, BOSTON

VOCATIONS FOR BOSTON BOYS

Nature of occupation?	Shoe manufacture.
Date of inquiry?	July 1st, 1910.
Name of firm?	
Address?	
Superintendent or manager?	
Total number of employees?	2730 male, 2280 female.
Number of boys and girls?	1200 boys, 1000 girls.
Has there been a shifting in the relative numbers of each?	No: there is fixed work for each.

Pay

Wages of various groups, and ages?	Errand boys, counters, carriers, 14 years old, \$3.50; assemblers, assistants, pattern boys, 16 years, \$3.50 to \$6; lasters, 20 years, \$6 to \$7; other work, 20 years or more, \$8 to \$12 for young men in early employment.
Wages at beginning?	\$3.50 to \$6.
Seasonal?	By year.
Hours per day?	7.30 A.M. to 5.30 P.M.; to 12 M. on Saturday in summer; one hour nooning.
Rate of increase?	This is very irregular, averaging \$1 per week each year.
a. On what dependent?	Not at all on age, but on ability, on position filled, or on increase in skill in a certain process.
b. Time or piece payment?	66 per cent piece-payment. Bonus for certain lines on quality and quantity of work, neatness of departments, etc.

How are boys secured?	By application to firm, by advertising, and by employees. It is impossible to find enough.
Their ages?	Fourteen years and up.
Previous jobs?	Nearly all boys come into this industry from school. A few come from other shoe factories or from retail shoe stores.
Previous schooling?	Grammar school or a certificate of literacy or attendance at night school must be presented.
Are any continuing this training, and where?	Yes; in public evening schools; in Y.M.C.A. classes, and continuation school in Boston.

The Industry

Physical conditions?	Most sanitary, with modern improvements and safeguards, with hospital department and trained nurses.
What variety of skill required?	Some mechanical skill. The ordinary boy of good sense can easily learn all processes.
Description of processes?	Errand boys, counters, carriers, assemblers, assistants, pattern boys, lasters, trimmers, and work dyeing and welting shoes. Also in office, salesman, foreman, manager, or superintendent.
What special dangers?	
a. Machinery.	The chief danger arises from carelessness.
b. Dust.	Modern dust removers are used.
c. Moisture.	Not to excess.
d. Hard labor.	Steady labor rather than hard.
e. Strain.	Not excessive.
f. Monotony.	Considerable on automatic machines.
Competitive conditions of industry?	New England is a great centre of the shoe industry. There is extreme competition, but with a world market.
Future of industry?	The future of a staple product in universal demand.
What chance for grammar school boy?	He would begin at the bottom as errand boy.

High school graduate?	In office or in wholesale department to become salesman or manager.
Vocational school graduate?	Trade school giving factory equipment would be best.
What opportunity for the worker to show what he can do in other departments?	The superintendent and foreman study the boy and place him where it seems best for him and for the firm.

Tests

What kind of boy is desired?	Honest, bright, healthy, strong . Boys living at home are preferred.
What questions asked of applicant?	As to home, education, experience, and why leaving any former position.
What tests applied?	For office work, writing and figuring.
What records kept?	Name, address, age, nationality, married or single, living at home or boarding, pay, date of entry and of leaving.
Union or non-union?	Open shop.
Comment of employer?	Education is better for the boys and for us.
Will he take boys sent by vocation bureau?	Yes.
Will he attend vocation bureau conferences if asked?	Gladly.
Comment of foreman?	Employment bureaus have failed us. We look everywhere for boys, but find few such as we want. The average boy can apply himself here so as to be well placed in life.
Comment of boys?	We have a bowling-alley, reading-room and library, park, and much to make service here pleasant. It is something like school still. We mean to stay. Piece-work will give us good pay by the time we are twenty years old.
Health Board comments?	Inhaling naphtha from cements and dust from leather-working machines, and overcrowding and overheating workrooms are to be guarded against in this occupation. The danger of such injurious process may be prevented by proper care.

*Census Bureau Report on this Occupation, Massachusetts,
1908*

Number of establishments, 413. Capital invested, \$35,260,028. Value of stock, \$104,171,604. Wages paid, \$38,959,428. Average earnings, \$562.59. Males employed, 46,063. Females, 23,187. Value of product, \$169,957,116.

Bibliography: *The Shoe Manufacturing Industry in New England*, I. K. Bailey (*New England States*, vol. 1, 1897) and *Massachusetts Labor Bulletin*, no. 14, May, 1910.

School fitting for this occupation: The Boston Continuation School.

....., *Investigator.*

The information thus gathered is issued in bulletin form and widely distributed. Bulletins have already been published on "The Machinist," "Banking," "The Baker," "Confectionery Manufacture," "The Architect," "The Landscape Architect," "The Grocer," "The Department Store and its Opportunities for Boys and Young Men," "The Lawyer," "The Shoe Industry." These are issued primarily to supply teachers and others with the necessary information and material, in order that they may be able to advise parents and boys intelligently in the choice of an occupation, but are not intended to take the place of personal consultation and coöperation. The contents of the bulletin on "The Machinist" are as follows: — The trade — its divisions, dangers, conditions, future; pay, positions and opportunities; apprenticeship in the trade; apprentice courses for machinists, die and tool makers, and pattern makers; the boy — qualities and training required; comments of people in the trade; comments from the Massachusetts Board of Health Report; statistics of manufacture, growth of the industry by decades; bibliography; trade periodicals, and a list of schools giving courses fitting for the occupation. Before being issued in its final form the bulletin was submitted for approval to a number of employers, an econo-

mist, and a labor union official, so that it is fair to assume that the information given is absolutely correct.

The City of Munich has issued over a hundred of such handbooks or bulletins.

The Boston School Committee has aroused the interests of the teachers, and this must be an essential feature of any scheme for influencing the children of the elementary school. A committee of councillors is appointed for each school, and lectures and addresses are given to interest both parents and children. A card record system is adopted on which all the graduates of the school are entered, so that all the particulars required concerning each child are known and charted. A tabulation of the data thus obtained through a number of years should provide valuable material for intelligent action in the future.

A system of summer apprenticeships has been established, and a special officer appointed to find work for boys during the summer. The business men of the city have heartily endorsed this plan and agree to give the boys the best possible chance to obtain a knowledge of the business, and to show whether they are fitted or not. In the "Trade School for Girls" two "vocational assistants" have been appointed and the regulations of the School Board require such an officer for each hundred girls in the school. There is also a paid assistant in the High School of Practical Arts.

There are decided possibilities for vocational guidance within the school system itself, and these possibilities should be effectively brought to the attention of the parents. Probably the most unique example of effort in this direction is the Annual Report of the School Committee of Boston for 1912. This report is issued "to the fathers and mothers of Boston," and steps are taken to see that it reaches the hands of those for whom it is intended. It is well illustrated and gives an account of the organization and purpose of every type of school under the jurisdiction of the Board. Every pupil in grade

eight and some in grade seven are furnished with a copy. The study of the report is encouraged by a series of twenty-eight questions which the pupils are requested to answer. It is hoped by these and other means to acquaint the parents with the facilities and opportunities the schools have to offer.

During the past two years the movement towards adequate vocational guidance has made remarkable strides. The present status of the movement has been well summarized by William T. Bawden, managing editor of "Vocational Education."

Not so very long ago the problem of vocational guidance meant the finding of a job for the individual in some industry, and it was regarded as a very simple proposition.

As men and women have studied into these problems, however, they have discovered that here is an immense field, challenging the most thorough investigation, and offering almost unlimited opportunities for the application of scientific method and skill. The effort to find employment for boys and girls has been largely transformed into an effort to keep the boys and girls out of the industries, by convincing them and their parents of the value of further schooling, at least until there is available a fund of more definite knowledge of the industries into which it is proposed to send the children.

There are several distinct problems recognized in this general field of vocational guidance:—

(1) There are still those who believe the problem to be one mainly of guiding individual boys and girls into suitable employment.

(2) There are those who believe that in the present state of general ignorance, the ones most in need of vocational guidance are the teachers and parents who are themselves supposed to be the sources of advice.

(3) There can be no doubt that the industries need to be carefully and systematically studied, to the end that vocational counsellors may know as accurately and fully as possible the conditions into which they send the boys and girls. It is believed that many industries must be greatly modified before any organized agency can assume responsibility for the employment of children in them.

(4) Many believe that employers as a class are as much in need of vocational enlightenment as any of the others involved.

(5) And, finally, there are those to whom vocational guidance means the impartial distribution of advice and suggestion to children, parents, teachers, employers and the industries.

The extension of this movement throughout the country should do much to benefit the industries and assure congenial and profitable lifework to the industrial workers, who form the backbone of the population, and on whom the prosperity and policies of the nation ultimately depend.

IX

GENERAL CONSIDERATIONS

THE only asset of the worker in the productive industries is his labor, and he must, for his own sake and that of his family, obtain as much for it as he can. Every man should value his work partly in terms of the money he is able to earn and partly in the opportunity for experience that will make him eligible for greater serving power in the future, and he should be willing to sacrifice to some extent the former for the latter.

After carefully reviewing the situation one cannot help coming to the conclusion that one of the crying and outstanding needs is the education of the parent. He must be convinced that employment in the industries is as desirable for his children as "positions" in the so-called professions. Up to the present the only organization established for the promotion of industrial education, that has reached those with whom the ultimate decision will rest, and from whom the candidates for the industrial schools will be drawn, is the vocation bureau. The parent must be shown that conditions of labor are constantly improving and that continued education, either academic or industrial, will benefit himself and his children financially as well as socially.

The prejudice against industry, which undoubtedly exists, ought to be removed; and to this end an active local propaganda should be inaugurated with the distinct purpose of reaching the industrial worker, for he, if properly organized, is the absolute master of the situation. There is no class of the community better qualified to undertake this propaganda than the enlightened educator, as his advocacy

will not be liable to be hindered by charges of selfishness and prejudice and he will be better able to secure the confidence of both sides.

The theoretical interest taken by employers is thought, by the labor interests, to be inspired by ulterior motives, and this suspicion, whether justified or not, has induced the artisan to hold aloof. Generally speaking, though the leaders of labor organizations have put themselves on record as favorable to industrial education, the rank and file have held back. At present the wage-earner is neither for nor against industrial education. He is simply cautious — perhaps indifferent. In the United States his only experience has been with private trade schools run as money-making institutions, and on the evidence that has been generally presented to him his conclusions are justifiable.

In the conduct of this propaganda all labor organizations should be approached and the subject presented to them from every point of view. The discussion should centre on definite plans and deal with results that have so far been accomplished, and not concern itself with high-sounding generalities and stale platitudes. Every means should be taken to remove the distrust which undoubtedly exists.

Some are beginning to think that under present economic conditions the fixing of the age for entry into the industries at sixteen is a mistake, and that it is forcing the boy into the ranks of unskilled labor. It is argued that he is often less able at sixteen than at fourteen, owing to the unstable and uneducative character of his occupation between those ages. If the conditions existing between fourteen and sixteen years of age were different, if the child were educationally employed with a definite purpose in view, this question would not arise, but we cannot help doubting, with the conditions as they are and not as we would like them to be, whether it is wise to retain a restriction

that would be eminently desirable were the conditions different.

Parents should be encouraged to make a decision, or rather to help the boy to make a decision, much earlier than at present. It is not necessary that the particular kind of trade be decided upon, but simply that he is to go into some form of handicraft. The German parent is called upon to make these decisions at various stages in the child's educational career. At the early age of ten he must choose the form of general education he wishes his child to receive, whether primary or secondary. Undoubtedly this decision has to be made according to his means and position and not according to his desires. While the child is in the secondary school another choice has to be made, and in this second choice the natural aptitudes of the child have to be considered. The choice now made practically decides whether the boy is to be trained for a business or an industrial career. There is thus a considerable difference between Germany and America. In the former the parent decides, influenced, perhaps, by the boy. In the latter the boy decides (when a decision is made), influenced very little by the parent. The boy must be made to think of his future, difficult though it may be, and the folly of selling it for immediate but transitory gain pointed out to him. We must also change our views as to what are now socially considered as "menial" employments.

There is almost such a thing as a country being too prosperous. Industry is booming, and boys can now so readily become proficient in a number of occupations at which they can earn journeyman's wages by applying themselves to the running of one machine and turning out a part of a part of a product, that it needs considerable effort and sacrifice on their part to attempt to learn the whole of a trade even where factory conditions are such that this is possible. "Unskilled employment at fourteen with good money tempts the boy like a baited trap." The boy and his

parent should be clearly shown that as a general rule the higher the immediate pay the poorer will be the future prospects.

Consider the following regarding increased earning power given by a course of industrial training. Two hundred pupils before entering the Baron de Hirsch Trade School earned on an average \$5.39 per week. After five and a half months' training (the full length of the course given here), the same students averaged \$7.54 per week.

One of the most important factors in the consideration of wages is that the child commencing at sixteen overtakes the boy beginning at fourteen in less than two years. That his total income in four years would equal that of the other for six years we cannot yet prove, but the slight data we have seem to indicate that this is the case. The boy from fourteen to sixteen is worth \$4 a week if only to run errands. This equals \$200, or interest on \$4000 at five per cent. On this basis practically every boy represents a working capital of \$4000. The right kind of school training should send a boy out at the end of two years with an earning capacity of at least \$12 a week, or \$600 a year. On the same basis this equals interest on \$12,000, an increase of threefold in two years. After a year's special training this increase would be still greater.

Next take the experience of the North End School of Printing, Boston.

A number of the master printers of that city have established a school in which one year's training is given. After this training the boy enters the shop and receives the same wages as are paid at the last half of the third year of the ordinary five years' apprenticeship. It will be seen by the following table that the wage is also from three to five dollars greater than that of the ordinary apprentice during the same years. In this school, boys are not taken until they are sixteen years of age, and they are required to pay a tuition fee of \$100:—

*Income for five years, ordinary apprenticeship, without
the School*

First year	{ 26 weeks at \$4.00	\$104.00
	{ 26 5.00	130.00
Second year	{ 26 6.00	156.00
	{ 26 7.00	182.00
Third year	{ 26 8.00	208.00
	{ 26 9.00	234.00
Fourth year	{ 26 10.00	260.00
	{ 26 11.00	286.00
Fifth year	{ 26 13.00	338.00
	{ 26 15.00	390.00
		<hr/>
		\$2,288.00

*Income for the same time, one year of which is spent in
the School.*

First year in the school	000.00
Second year	{ 26 weeks at \$9.00	\$234.00
	{ 26 10.00	260.00
Third year	{ 26 11.00	286.00
	{ 26 12.00	312.00
Fourth year	{ 26 14.00	364.00
	{ 26 16.00	416.00
Fifth year	{ 26 18.00	468.00
	{ 26 18.00	468.00
		<hr/>
		\$2,808.00

Income, five years, one year in School.....	\$2,808.00
Income, five years, shop apprenticeship	2,288.00
	<hr/>
	\$520.00

Less tuition	100.00
Net advantage of one year in School	<hr/>
	420.00

The Massachusetts Industrial Commission of 1906, previously referred to, investigated the cases of more than eight hundred boys and young men, employed within the State, and ascertained the average weekly wages of those who had been trained in the shops and of those who had

been trained in industrial and technical schools. The results obtained are given below: —

Age	Average wages of shop trained boys	Average wages of boys trained in technical school
	A	B
14	4.00	
15	4.50	
16	5.00	
17	6.00	
18	7.00	10.00
19	8.50	11.75
20	9.50	15.00
21	9.50	16.00
22	11.50	20.00
23	11.75	21.00
24	12.00	23.00
25	12.75	31.00

A summation of this table shows that if two boys of ordinary intelligence and ability had graduated from the elementary school twelve years ago and A had gone to work at once, while B had entered a good industrial or technical school, A would have earned with twelve years' work about \$5122.50, and B about \$7387.50, or about one and a half times as much. This estimate gives to each boy a vacation of two weeks per year without pay. One has nearly reached the limit of wages paid to unskilled labor, while the other, with training and experience, is just beginning to get a rapid advancement in wages that may enable him to launch out into business on his own account, and thus furnish employment for many who, like his unfortunate schoolmate, were forced to go directly from the elementary school to the shop.

The investigations of Mr. James M. Dodge, then President of the American Society of Mechanical Engineers, along the same lines are well known, and all point to the same conclusion. Such facts have a powerful influence, and for this reason less emphasis should be placed on the ped-

agogic and cultural aim and objects of industrial education and more upon its economic and social aspects. Both business men and workmen are more receptive to arguments of this character.

Industrial education imposes mutual duties on the employer and the employee; both receive and both give. The employer must receive more and better work and the employee, in return for giving this, must receive greater consideration and higher wages. The object of the manufacturer is increased production. The object of the workman is higher wages and comfortable and safe working conditions. If the manufacturer advocates industrial education, and is not willing to recognize that this entails higher wages, that type of education will be opposed, and rightly opposed, by organized labor. We need less avarice on the one hand, and less selfishness on the other. There is a labor of quality and a labor of quantity. Industrial education will increase both, and in these days it is perhaps more necessary to inculcate pride of workmanship rather than speed of production.

As Mr. Frank Vanderlip says:—

We have gained markets because we have cheap raw material, because of American (United States) inventive ingenuity, and because of the great scale upon which we have done things; but never have we gained an important market because we could do a piece of work better than our competitors could do it. Never have we sold an important consignment because superior handicraft entered into its production.

Great economic losses are perpetually occurring through industrial incompetency. The increase in the nation's wealth that would be gained by better preparation is incalculable, and the additional profit to the industry can readily be understood. A flaw in a rail or a girder, imperfect plumbing in a tenement, may cause the loss of hundreds of lives before the defective piece of work can be replaced or remedied. Ninety per cent of the repairs re-

quired to working machinery are said to be directly due to the negligence and ignorance of the operator. Instruction in the care and manipulation of appliances will reduce this loss by at least seventy-five per cent, and all operators, particularly those employed on piece-work, should personally gain in the same proportion. The efficiency of labor would not have to be extraordinarily increased, to raise the earning power of the individual ten cents a day, yet such an increase would amount to nearly a billion dollars annually.

The right kind of education will not only get the boy into the "job," but it will also get him out of it. The American youth is held to one branch partly by ignorance and partly by economic pressure. It can hardly be expected that if he receives good wages under the piece-work system he should leave one machine in the factory to learn to operate another where he would receive less money, being less skilled at the new work. The only place where he can acquire skill in working a new machine is in an evening trade or industrial school.

Initiative has been defined as doing the right kind of thing without being told, and ability as doing the right thing after being told once, and in the education to be given, both these qualities need to be developed. Their possession will enable the boy to rise step by step in his *chosen* trade and give him stability and ambition. Stability does not mean sticking to one thing forever, but it does mean standing by that one thing until all its possibilities have been exhausted. When this result has been achieved, movement is desirable. This movement is very different from the restlessness and shiftlessness which is so characteristic of the modern youth. In every workman we should recognize the possibility of a competent foreman, and the instruction given should be such that, while it is immediately applicable to his daily work, it will yet have a value in the future in any higher position the young workman may prove himself capable of filling.

Another function of industrial education that should be stressed is the development of what has been called industrial elasticity. When Bessemer invented his new method of making steel, thirty-nine thousand workmen formerly engaged in making bar iron in puddling furnaces lost their means of making a living because the industry took a new direction. This is by no means an isolated example. Science and invention are sweeping away many of the humbler occupations and evolving new ones, and industrial versatility is at least quite as necessary as industrial skill or knowledge. The educational watchword, "Knowledge is Power," is responsible for a great deal of undigested and unassimilated information. Only that knowledge is valuable which is usable. It is the application that is made of the knowledge that gives the power, and not its mere possession.

The advance of industry in all countries depends very largely on employers being able to secure workmen of sufficient knowledge and flexibility of mind to be able to turn readily from the one thing they have been doing to something different, according to the character of the improvement that has been made in the processes of the industry.

The object in view is the development of the industrial productivity of the country to the utmost extent consistent with social betterment and welfare. Thousands of men are employed to-day in industries that had no existence fifty or sixty years ago. The bicycle, the telephone, electric light, and automobile have given birth to a number of new employments. An industry becomes obsolete in a generation and a valuable machine is often scrapped in less than a decade. Under these circumstances it is essential that the workers should have the opportunity to develop that elasticity, versatility, or adaptability which will prevent them being thrown out of employment when these changes come, as come they will.

Skilled labor is essential. The progress and develop-

ment of an industry depends on the technical training of the few. Its continuance depends on the industrial training of the many. What the future artisans are to be, and the part they are to play in the national life, are probably the most important questions the political economist has to consider. To secure workers in the skilled trades under present conditions entails a wanton economic waste. Many who might be most valuable are never known because they have never had an opportunity to discover their own talents.

It is sometimes urged that an increase in the number of skilled workers will render it difficult for the present workers to obtain employment, and it is pointed out that even now many are unable to get work. The fact that many of the men engaged in a trade are unable to secure employment is by no means always evidence that it is overcrowded. It may be found that the work has to be sent abroad because there are no men sufficiently skilled to do it, and that the unemployed are largely men who only partially understand the various processes involved in the work, a defect which can be remedied only by deeper knowledge and broader training.

PART III
THE DANGERS

X

DANGERS ARISING FROM THE MISINTERPRETATION OF FOREIGN SYSTEMS, AND OTHER CAUSES

IN the promotion and organization of industrial education many mistakes are likely to be made. Some of these have been incidentally referred to throughout the preceding pages: those arising from the lack of parental influence and guidance, the misdirection of the work of the elementary schools, the non-enforcement of compulsory attendance laws, the drifting of adolescents, the haphazard choice of occupations, and the danger of ignoring the advantages of a rational system of apprenticeship. In addition to the above there are a number of others, some of which will now be dealt with.

Many mistakes have been made and much money wasted in the building and equipment of industrial and technical schools. All that should be aimed at, for the shop work, is the reproduction of the best workshop conditions. The structures provided for this work should form an integral part of the whole building and have as much attention devoted to them as those provided for the academic instruction, in order that the two branches may be regarded as of equal value. Buildings can be architecturally beautiful without being too costly, if a simple effective style be chosen.

Often the machinery, tools, and general equipment are designed more for the purpose of making an effective show than for efficiency of service. Dr. Andrew S. Draper, Commissioner of Education for the State of New York, says: —

Many a time a principal or teacher pleads for an appropriation with which to buy machinery, tools, and other equipment without any definite theory, or plan, or end in view. If refused he would

feel outraged and become a martyr. If given, he studies the catalogues, and sees the agents for the purpose of spending the money in ways that will look well and make an impression upon the people, who always love an object lesson and are often susceptible and superficial about industrial training. Real tradesmen and workmen discriminate: and they are amused by what they see. There is not enough substantial result to it. I know very well that this is not always true, but quite as well that it is often true.

He has also pointed out that the preponderating influence of technical schools throughout the whole of America is in the direction of turning out men for professional and managing employments, and that they do not train workmen, and herein lies a real danger.

It is a grave error to inaugurate these schools with costly equipment and elaborate buildings. A plain building of the most modern and beautiful factory type (and there are some of these that might well be taken as models) is all that is essential, and money should not be wasted in non-essentials, particularly when better results can be obtained without them, and when the money can be better spent in directions which will materially increase the efficiency of the work.

It is a noticeable fact that the most vital industrial education, as far as training real workmen is concerned, is being done to-day in buildings which were not specifically erected for the purpose and which cannot boast any so-called architectural beauty.

The equipment started with should be the minimum, and no better training could be given than that which is to be obtained in gradually building up the equipment by the work of the students themselves. The funds could be better expended in payment for the services of teachers with sufficient knowledge and skill to supervise the building of equipment than in providing ready-made equipment which the students have not skill to use. Which will produce the better results, a \$20,000 equipment and a \$1000 teacher or a \$10,000 equipment and a \$2000 teacher?

Probably the greatest danger we have to guard against is the too slavish imitation of foreign systems. It is perhaps not possible to treat of industrial education without some consideration being given to the plans followed and the methods pursued in Germany. Owing to the success of that country in the industrial world, attention has been concentrated on her system of education. In connection with this, certain misconceptions have arisen, and we are in danger of losing sight of salient features and principles inherent in the German people and German methods, which features and principles do not exist in the same form in any other country or people.

The Germans themselves are fully alive to the danger of following too closely the methods pursued in other countries. In 1904 a German commission was sent to the United States to investigate American education, and in the course of that inquiry they paid special attention to the industrial phases of it. In the preface to the report made by this commission is to be found the following:—

The school system of a country is part of its culture. It is indissolubly linked with its historic development, its economic and political condition. Thus the American school system, too, with its superiorities and defects, is conditioned by the extremely rapid economic development of a young people, the democratic constitution of the country, its mode of settlement, the peculiar mixture of its population. In all these respects we live under essentially different conditions. If we would learn from the Americans we should try less to imitate one or other successful measures than to appropriate sound and effective ideas of organization.

When the principles laid down in the above quotation are recognized and the fullest consideration given to the fact that the school system of a country "is indissolubly bound up with its historic development, its economic and political condition," then, and then only, can investigations of foreign school systems bring permanent good to the country instituting the investigation.

Probably the educational system of Germany has received more attention from American investigators than the system of any other country, and it is time attention was called to several mistakes which have arisen owing to mistranslation and misunderstanding of words, and the assumption that the German term necessarily means the same as the corresponding English or American one. We shall also call attention to factors in industrial education other than schools, which show how the German has bent all his energies, political, social, and moral, has brought all his powers into play, and has utilized his natural genius for order and system to accomplish this one end, — industrial efficiency. It is not our purpose to describe and enumerate the different types of schools to be found within the limits of the German Empire. This has been done *ad nauseam*.

The editor of the "American Machinist," from whose paper many of the following particulars are taken, first called attention to the confusion arising from the assumption that the term "trade school" as used in America has the same meaning that attaches to it in Germany. A trade school according to the American conception is one intended largely to take the place of apprenticeship, and to teach the trade as far as possible in the same way as it would be taught in the shop, giving no more of theory and scientific principles than is absolutely necessary for the working of the machinery required. It does not at all affect the argument that, owing to the present agitation and the opposition of organized labor to this type of trade school, a new type is being evolved, broader in its scope and wider in its application.

The majority of our people believe that in the ordinary course of events the German boy learns his trade in a school supported at the public expense. The average American, whenever he can turn his thoughts from baseball or moving-picture shows, thinks that the German boy chooses his

trade and then goes into a school to learn it. It is true that in some few industries such as watchmaking, woodcarving, and art metal-work, trade schools are to be found, but even in these cases they only supplement and never take the place of apprenticeship. With one or two exceptions, due to local conditions, it is true to say that neither federal nor local Governments in Germany engage in the teaching of trades. Actual trade teaching is more common in London or Chicago than it is in Berlin or any other German city. In America industrial education is taken quite commonly to mean definite trade teaching, in Germany it is not.

Broadly speaking, there are in Germany two classes of industrial schools, one designed to supplement shop work during apprenticeship, and the other to perform the same service after the apprenticeship has been completed. Boys enter upon their apprenticeship at fourteen years of age, and in the comparison of the two systems this most important fact must not be lost sight of. The work of the "Continuation School" is generally done in the evening, though in some cases it is taken in the daytime and partly on Sunday, but the general tendency now is to substitute work in the daytime for that previously taken in the evening. Attendance at these schools is compulsory, and the responsibility of seeing that the attendance is duly made is thrown upon the employer. The purpose of these schools is officially said to be —

(1) To supplement the general education gathered in the common schools with such practical knowledge as will be of value in winning a livelihood.

(2) To cultivate the sense of religion, morality, and patriotism.

This purpose is clearly shown by the curriculum drawn up for each. For instance, in the continuation school for business apprentices the course is as below.

CONTINUATION SCHOOL FOR BUSINESS APPRENTICES

STUDIES	HOURS PER WEEK			
	Preparatory year	First year	Second year	Third year
Religion	1	1	1	1
Arithmetic ¹	2	2	1	1
Bookkeeping	-	-	1	-
Banking and exchange	-	-	1	-
Business correspondence, reading ²	3	2	1	1
Commercial geography and study of materials ³	1	1	1	2
Studies in life and citizenship ⁴	-	1	1	1
Stenography	-	2	2	-
Writing	1	1	1	-
Total	8	10	10	6

¹ All the problems are taken from the actual business in which the pupils of a given group are engaged.

² Reading is general, but much of it pertains to business careers and to the particular business in which the pupils are engaged.

³ The raw materials and also the manufactured products are studied. One group, instead of this, receives instruction in money, banking, and finance.

⁴ Personal and public hygiene; duties, rights, and opportunities of the apprentice; decorum; development of trade; transportation and communication in Germany; trade organizations; capital and labor; chamber of commerce, and industrial exchange ("Gewerbe Kammer"); civics, made as concrete as possible.

The course of study in the school for basket makers at Lichtenfels, Bavaria, includes the following subjects:—

German language and commercial papers, grammar, reading, correct writing, calligraphy, industrial calculations, industrial bookkeeping, history of industry and basket weaving, freedom of industry, organization of chambers of commerce and industry, industrial legislation, communities, social and economic arrangements, constitution of state and empire, geometrical drawing and elements of theory of projection, freehand drawing, technical drawing, workshop instruction, including knowledge of materials, tools and appliances, and the cultivation of osiers.

The course for carpenters and cabinet-makers provides for the following: —

CONTINUATION SCHOOL FOR CARPENTERS AND
CABINET-MAKERS

SUBJECTS OF STUDY	HOURS PER WEEK		
	Winter half-year		Summer half-year
	Classes I to III	Class IV	Classes I to III
Religion	1	—	1
Arithmetic and bookkeeping ¹	1	1	1*
Reading and business composition	1	—	1*
Studies in life and citizenship	1	1	1
Drawing			
(a) Carpenters	6	6	—
(b) Cabinet-makers	3	6	5
Practical Technology ²			
(a) Carpenters	2	—	—
(b) Cabinet-makers	2	—	1
Total: (a) Carpenters	12	8	3
(b) ¹ Cabinet-makers	9	8	9

* Alternately.

¹ As before the work in arithmetic consists of the actual problems of the trade concerned, here of the problems actually to be solved by carpenters and cabinet-makers.

² Study of woods, tools, machines, and their care and uses.

In some cases preparatory courses are provided, and these are intended for those elementary school pupils who complete only the seven compulsory grades of the eight public school grades. It will thus be seen that industrial education in the continuation schools of Germany means, chiefly and usually, an education entirely of an intellectual character, but related to the trade or industry which the pupil has already chosen and at which he is actually working. No student is admitted to the second class of schools until he has actually completed his regular term of apprentice-

ship. His attendance at them is purely voluntary and a small fee is charged.

The "Trade School for Machine Builders" is a literal translation of the German name, "Die Fach-schule für Machinebauer." That this school is not a trade school in the American acceptance of the term is shown by the subjects taken. These are, mathematics and mathematical exercises, physics, chemistry, technical mechanics, machine elements and machine study, properties of materials and tools, electrotechnics, general and mechanical drawing.

The German term "Handwerkerschule" means "hand-worker school," and is a school to be attended by hand-workers and not necessarily a school where hand work is either done or taught. The name was adopted long before there was any thought of the possibility of including actual trade work in a school curriculum. The schools above described are essentially improvement schools.

Even in those schools which have a workshop equipment, a student must have completed his apprenticeship before he can enter, and the object is to offer facilities for doing work different from that he has been doing in the shop. None of these schools are trade schools. They have, indeed, been adversely criticized in Germany as educating men out of the shops rather than into them. No matter what type of school is examined, the recognition of the intellectual side of the industry is the basis on which the course of study is built.

If the German industries are better supplied with skilled workmen than the American industries, it is due quite as much to the apprenticeship system as to the educational system. The education given broadens the mind and general understanding of the workmen, but it does not increase their number, nor does it add to their mechanical skill and dexterity except indirectly through the cultivation of their intelligence. If, then, we are, according to the general

trend of public discussion, to copy Germany, adequate attention must be paid to its apprenticeship system as well as to its educational system. Even in Munich, where the continuation schools are best developed, there are over six thousand apprentices. This system of apprenticeship as applied in Germany is a serious business. The contract is not regarded lightly, and neither party can break it except for weighty reasons.

While the law does not contemplate or prescribe shop work, a municipality or other authority can add to the prescribed requirements, and hence local differences arise. There is nothing to hinder a community from putting in shops if it so desires, provided it is willing to pay the additional expense incurred. Owing to this local freedom allowed by the general law, the schools differ in method, character, and plan, but however widely they differ in these points their aim is the same. They travel along different roads, but they have the same goal in view, and that is the training of the young workmen along the line of increased efficiency as citizens. No attempt is made to develop "skill" nor even to teach a specific trade, but the idea is to give each student a comprehensive knowledge of the trade and its function in the community.

One would think, judging from the American eulogies of the German system, that the Germans themselves were thoroughly satisfied; but as a matter of fact their system is the subject of severe criticism, not only from observant outsiders, but also from numerous directions within the limits of the empire itself. They are wrestling with the same problems as are the American people. German manufacturers are complaining of want of skill, and many of them are adopting systems of training their own apprentices much as American manufacturers are doing. But even in this particular an essential difference is shown from the American practice. When the methods of training adopted by manufacturers are approved by the educational author-

ities, they are subsidized, to some extent, by the State, and this approval relieves the young apprentice from attendance at the regulation continuation school.

The German people are also confronted with the problem of overcrowded professions, owing to the prominence given to the training of leaders and officers. The same mistake is being made in America. As far back as 1886 there was an excess of more than one thousand unemployed graduates in engineering. One large engineering establishment found it necessary to display a sign reading, "No Polytechnic need apply."

In 1890 the German Emperor delivered a speech before the Berlin Conference on Secondary Education. He said: —

The course of training in our schools is defective in many ways. The chief reason is that since 1870 the classical philologists have been lodged in the Gymnasium as *beati possidentes*, and have laid the chief emphasis on the subject-matter of instruction — on learning and knowing — not on the formation of character and on the actual needs of life. . . . The demands made in the examinations show that less stress is laid on practical ability than on knowledge. The underlying principle of this is that the scholar must, above all things, know as much as possible; whether that knowledge fits the needs of after life is a secondary consideration. If one talks with one of these gentlemen and tries to explain to him that the youth must in some measure be practically equipped at school for actual life and its problems, the invariable reply is that such is not the mission of the school, that its chief concern is the training of the mind ("die Gymnastic des Geistes"), and that if this training of the mind is rightly ordered the young man is placed in a position by means of it to undertake all the necessary tasks of life. I think that we cannot go on acting from that point of view any longer. . . . Our schools, and I speak more especially of the Gymnasium, have undertaken a task beyond human strength, and have, in my opinion, caused an overproduction of highly educated people — more than the nation can bear.

Germany is paraded before us as a country in which every individual is fitted by the State for the part he is to

play in life, and this is to some extent true. But when we are told that in this particular we should set to work in sober earnest and imitate their methods of trying to bring about this result, one essential difference, which makes such imitation impossible, is forgotten — the American is not German.

At first sight one cannot help feeling great admiration for the beautiful machine which the German has evolved. For certain purposes and along certain lines the machine does excellent work, but the American conception of freedom would not flourish in such a soil. Of course, in America, freedom is too apt to become license, but even this is perhaps more to be desired than the suppression of all freedom. From the age of six every German child is captured by the State and trained on the assumption that he is to fill a certain fixed place in the national machine. That place is generally definitely decided at the age of ten. Each school and each type of school is designed for manufacturing certain parts and wheels and cogs of this machine. If the pupils or their parents were free to choose according to mental ability or capacity, not much adverse criticism could be offered; but caste, class distinctions, and financial considerations are largely the principles which determine whether the pupil shall enter a certain kind of school. Of course, even in Germany nature sometimes refuses to be bound, and we hear of boys and men who have been strong enough to break the fetters which would shackle them; but the freedom of movement, either within a class, or from one class to another, that is so common in America, is seldom heard of in Germany.

Both American and German schools are designed to produce good citizens, but the ideals of citizenship held by the two peoples differ widely. The German subordinates the rights of the individual to the demands of the community. The American recognizes the rights of the individual, and

offers every facility for the development of the gifts he possesses. The German has not yet recognized that, unless the individual be allowed his fullest growth, his service to the community will be lessened to the extent that his growth is restricted. The German reverences law, order, and properly constituted authority. The American tolerates them. The German workman will do what he is told to do, without giving much thought to the reasonableness of the order. The American workman wishes to be convinced of the effect of, and the basis for, the order before he dreams of carrying it out, and even then he will do it in his own way. The German is dependent, the American independent. The German acts first and thinks afterwards. The American thinks first and acts afterwards, if he wishes. The American recognizes the liberty of each personality. The German ignores the individual and considers the State supreme.

The military system has done much towards bringing about the national attitude of the German mind. For one, two, or three years every able-bodied German must pass through the ranks. Elementary school teachers, candidates for that position and others who reach a certain standard of education, are only liable to one year's voluntary service. The "certificate of exemption from military service" is a recognized standard by which applicants for various industrial positions can be measured. This system seems admitted to be of distinct educational value to the individual and of considerable industrial value to the nation. The effect on the physical side is great and its general moral influence is seen in the shop at every turn. Masters and men have gone through the same training together, and have learned that order, system, and discipline are just as necessary in industrial affairs as they are in military operations. It is not too much to say that military service has played a great part in the making of industrial Germany.

If we were to adopt the whole organization of the German system, there would still be something lacking without which success could not be achieved, and that is the spirit of the German people. We need not so much the imitation of certain specific institutions as the inculcation of the spirit and purpose which has fostered them.

The London "Times" Commissioner, who in 1903 conducted a thorough investigation of the industrial conditions in Germany, says: —

The secret does not lie in this thing or that, as we are so often told, nor can it be formulated under two or three heads or half a dozen; but it can be compressed into one word — work. Not work in one or two directions by one or two classes, but work all round from top to bottom — from the Kaiser to the workshop apprentice. The Germans have been forced to become a manufacturing and exporting nation in order to support themselves. They have deliberately bent all their energies to the task; have brought their best mental gifts — science, order, method, forethought — to bear upon it, and have spared no pains or sacrifice to accomplish it.

First, the Government. It has always kept in view the duty of fostering industries, and it never misses a point or loses a chance in fostering them. Hence the judicious factory legislation, the great insurance scheme, the educational system (which really is a "system"), and the carefully devised tariff, with numerous minor points of policy, both active and passive.

Then the manufacturers. They have pushed resolutely forward point by point, taking advantage of everything that might help them: they have studied the market with ceaseless vigilance; they have encouraged advance by scientific research, artistic training, and manual skill; they have sent their young men wherever they could best learn; they have provided good working conditions, and have supported innumerable institutions for the welfare of their work-people.

The traders have been no less active in their way, and the teachers of all grades have brought equal diligence and capacity to bear upon their important functions. The general body of citizens have contributed indirectly to the general result through the faithful exercise of municipal duties, the poor-law administration and the numerous institutions such as labor registries, all of which tend to the well-being and efficiency of labor.

Over the entrance to some large works in Nuremberg, inscribed on a marble tablet in letters of gold, is the following inscription: —

"What work has won
Work will retain
Through the long centuries.
Thus God decrees."

The discussion of educational questions in Germany is not hindered by misapprehension and misunderstanding owing to confusion of terms. The nomenclature is accurate, and everybody knows exactly what is meant and included in the name of any type of school. In referring to this, the United States Deputy Consul at Chemnitz says, "This certainty removes all danger of a waste of energy and time in misunderstood discussions, false criticisms, misapprehensions, and a general useless and wasteful cross-line fire between educational reformers."

As Ernest C. Meyer of the University of Wisconsin has said: —

She does not neglect and expose labor to the ravages of disease; she does not neglectfully expose labor to economic destruction through the vicissitudes of accident and sickness and invalidity; she does not neglectfully expose labor to brutal exploitation on the part of reckless corporations; she does not neglectfully expose labor to wanton destruction of life in the mines and in the factories. Hand in hand with that grand system of industrial education went the development of those institutions necessary for the conservation of the industrial man. It is not sufficient that industrial values be merely created; if a nation is to have lasting benefit therefrom, they must be scrupulously preserved.

We must learn from Germany that the problem of industrial education is to be approached and attacked from all sides. If we would succeed we too must do outside the schools a number of things that make for industrial progress that we are in the greatest danger of forgetting, and without which any system of industrial education will largely fail of its full measure of success. We must give much

attention to the conservation of natural resources, but like Germany, while devoting the fullest consideration to the conservation of our forests, our soils, and other products of nature, we must concern ourselves most particularly with the conservation of the man. And, finally, the deeper lesson to be learned from Germany is revealed by the fact that she devotes more attention than any other nation in the world to the protection of the industrial worker.

THE END

APPENDIX

APPENDIX A

RESOLUTIONS ADOPTED BY THE NATIONAL ASSOCIATION OF MANUFACTURERS OF THE UNITED STATES OF AMERICA, MAY 21, 1912

THE series of resolutions adopted by the National Association of Manufacturers of the United States of America is probably the most comprehensive statement of our educational deficiencies, and the remedies therefor, ever made. For this reason those resolutions are here quoted. They also summarize to a very large extent the arguments made in the preceding pages.

WHEREAS, one-half of the children in the common schools of the United States leave school by the end of the sixth grade, with no substantial education requirements beyond reading, writing, and arithmetic in their simpler forms, the essentials of education and citizenship coming, if at all, after the sixth grade; and

WHEREAS, this half of the children soon forget much of what they learned in their brief school experience, and

WHEREAS, truancy and absence are so prevalent that less than three-fourths of the children are in school as much as three-fourths of the time, the enrollment being 17,000,000 and the average attendance being under 12,000,000, 1,600,000 being permanently absent from and unacquainted with school life; and

WHEREAS, illiteracy in the United States is fifty times that of several Continental countries and is four times greater among the children of native whites than among the native-born children of immigrants; and

WHEREAS, in many schools and many cities educators are finding great cultural and educational value in the development of the motor activities, the practical and creative desires of the youth, in highly developed practical and extended courses in manual and prevocational training, and such courses are developing, in an unexpected degree, an appreciation of the dignity of labor of all kinds, and such moral qualities as diligence, concentration, perseverance, and respect, and causing many to successfully continue in school who otherwise would leave discouraged early in the course; and

WHEREAS, a majority of the children who leave school prematurely do so from no economic need, and in fact are idle about half the time between their fourteenth and sixteenth years, being the first two years out of school and average for the first two years little over two dollars per week in earnings, leaving school principally because their interest in practical and creative effort is not provided for; and

WHEREAS, the loss to the schools of fifty per cent of the children in the middle of the elementary school courses is an incalculable waste of the human resources of the nation, these human resources being estimated by Professor Fisher as of the economic value of \$250,000,000,000, and five times the value of all our other natural resources combined;

Therefore, for these and other reasons, the National Association of Manufacturers by resolution pledges its earnest support of the following principles of educational betterment as essential to society and to the spiritual, social, and physical welfare of the youth:—

1. Continuation schools for that half of the children who leave school at fourteen years of age, and mostly in the fifth and sixth grades, these continuation schools to be liberally cultural and at the same time to be extremely practical and related as directly as possible to the occupations in which the several students are engaged.

2. The development of a modern apprenticeship system wherein by contract the respective and equal rights of employer and employee are fully recognized, the entire trade is taught, together with such other subjects as are essential to good citizenship.

3. The development of secondary continuation or trade schools, by which the more efficient of the great army of boys and girls who will enter the continuation schools may progress from these lower continuation schools, as in some other countries, to the foremost places in industry and commerce.

4. Compulsory education through adolescence, being until the seventeenth or eighteenth year, attendance being in the all-day school until the fourteenth year, and thereafter in either the all-day schools or in the continuation schools for not less than one-half day per week, without loss of wages for hours in school.

5. The strengthening of all truancy laws and the development of public sentiment in support thereof.

6. The training of teachers in thoroughgoing methods of industrial practice, including as part of such training extended experience in actual shop work.

7. The establishment of independent State and local boards of industrial education consisting of one-third each, professional educators, employers and employees, thereby insuring, as in the more successful European countries, the proper correlation of the schools and the industries.

8. The development of the vocational and creative desires of the concrete, or hand-minded children now in the grades, discouraged, anxious to quit, and often called backward, only because the education now tendered them is abstract and misfit.

9. The establishment of shop schools and part-time schools whenever practicable.

10. The establishment of departments or centres of vocational guidance so that the great majority of the children who now enter industry at fourteen with no direction, 85 per cent falling into the "blind alley" occupations, may, with the reversal of these figures, as in some other countries,

enter, under advice, intelligently and properly into the progressive and improving occupations.

Resolved, By the National Association of Manufacturers, that it is the imperative need of the industrial workers and employers of the country that thoroughgoing systems of industrial education be everywhere established, so that our factories may be more constantly and better employed; that standards of skill and of output may increasingly be improved, and that foreign and domestic markets may be better held and extended.

APPENDIX B

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